### RadarSens User Manual (part 2 of 2) - Safety Supplement



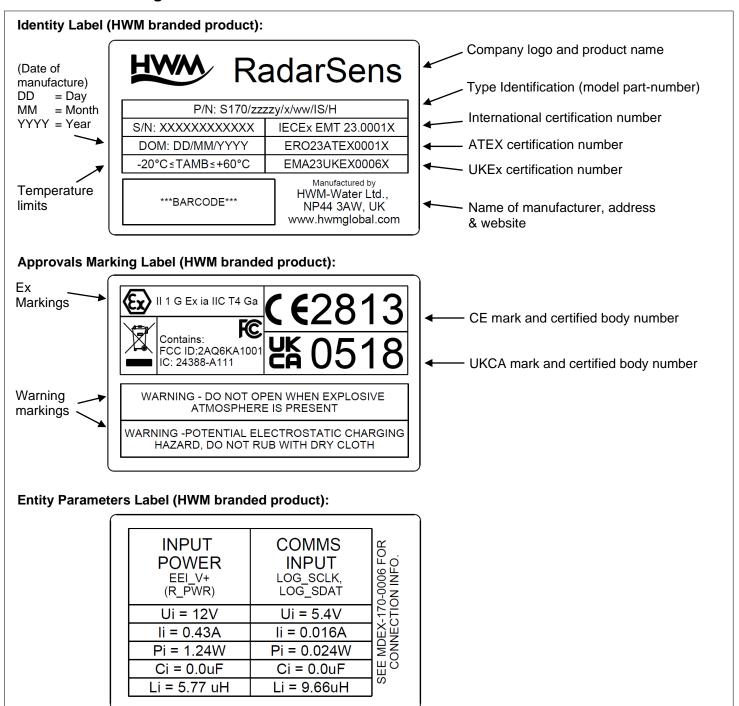
### 1: Introduction.

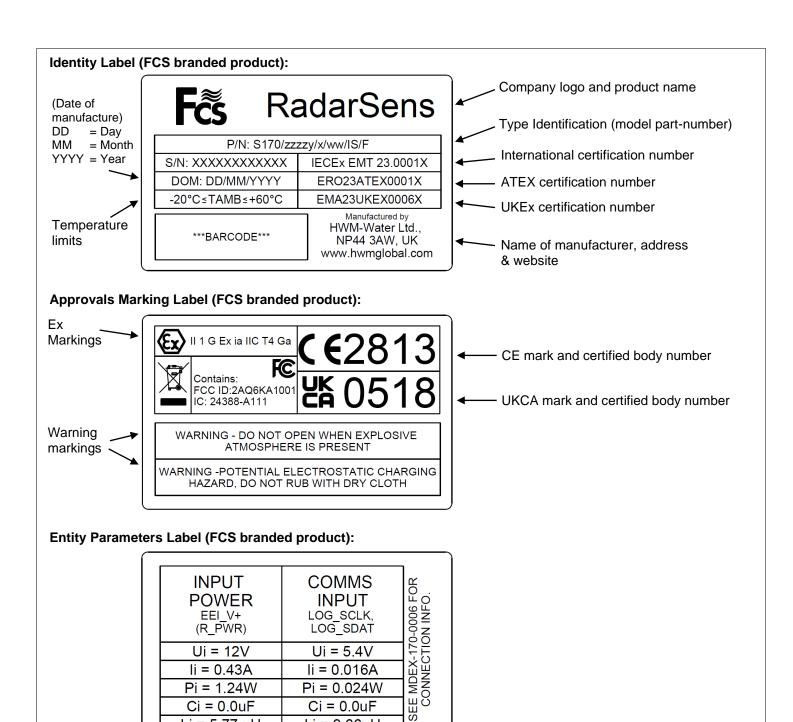
This document gives additional safety information for when the equipment is used in potentially explosive atmospheres.



**Warning:** This manual contains important safety and operating information. Please read, understand and follow the instructions / warnings contained in this manual.

### 2: Product marking





Li = 9.66uH

Li = 5.77 uH

### 3: Part Number scheme and nomenclature

A RadarSens model has a part-number in the format of **\$170/zzzzy/x/ww/I\$/t**. Refer to the drawing MDEX-170-0006, reproduced on the following six pages, for details of the Part Number scheme and nomenclature.

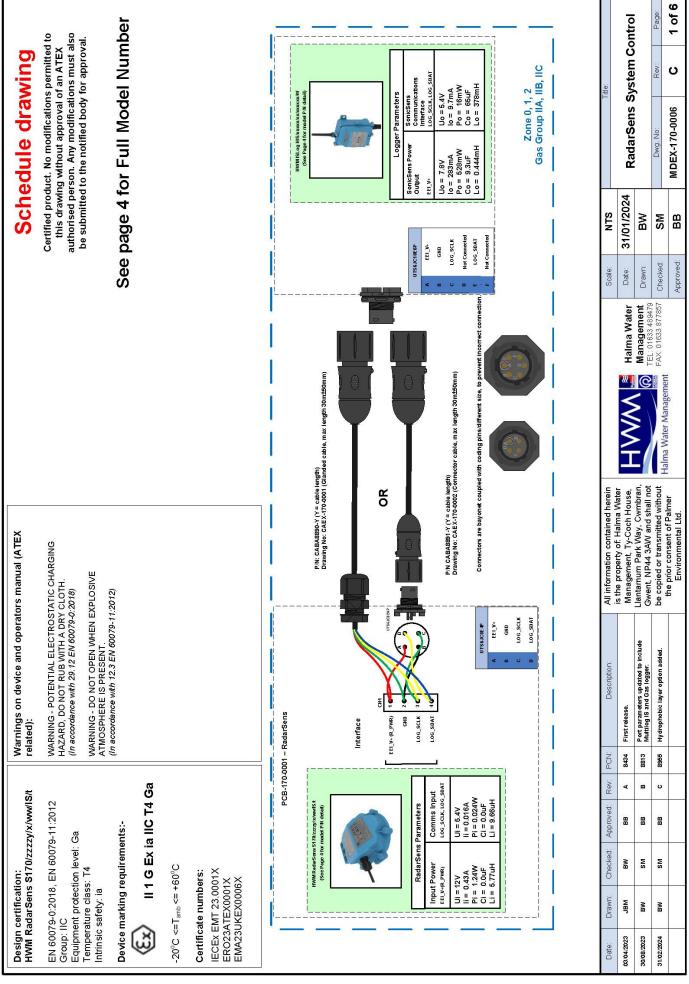
### 4: Connection and Entity Parameters

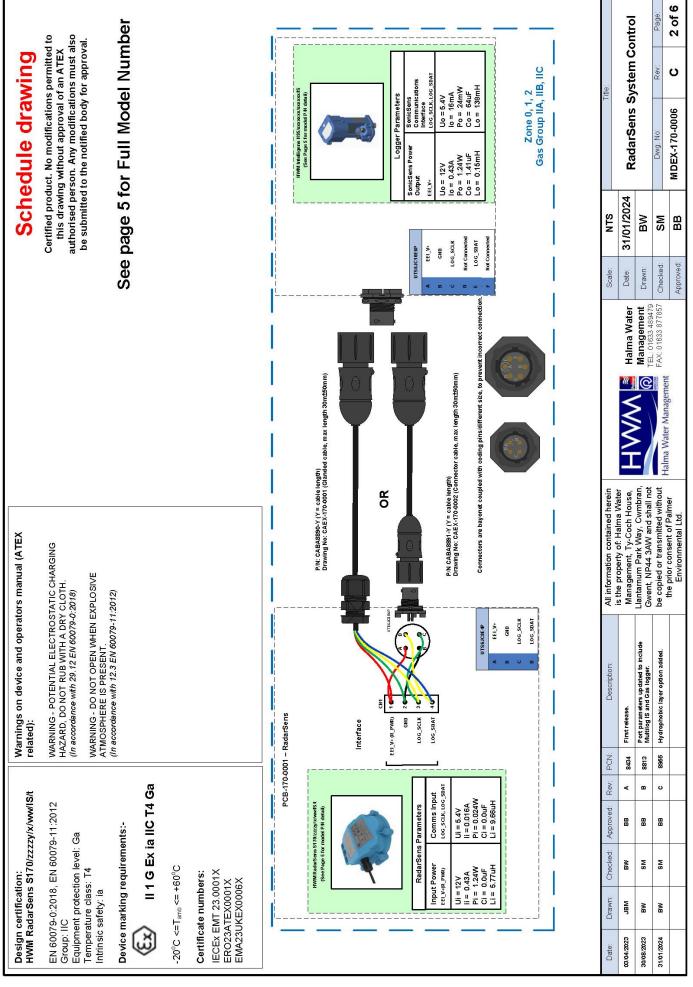
When used in a potentially explosive environment, RadarSens must be connected to HWM intrinsically safe data loggers only; do not connect to any other type of logger.

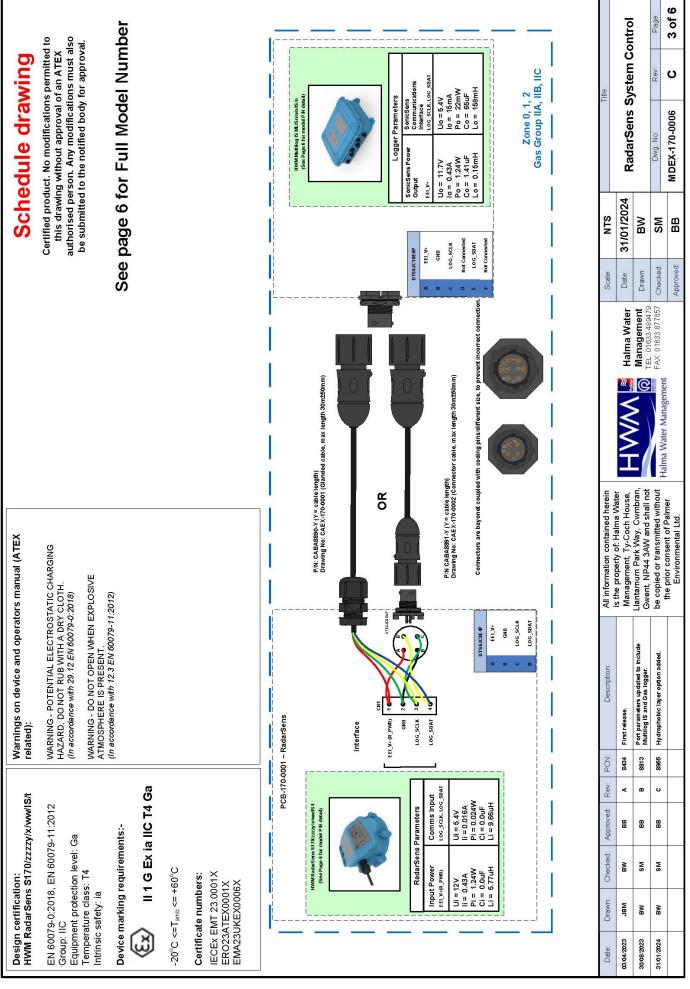
Use only with one of the following types of intrinsically safe HWM logger:

- ISLog.
   (An ISLog model has a part-number in the format of: HIS/xxxxx/xx/xxxxxx/W).
- COMLog2-IS.
   (A COMLog2-IS model has a part-number in the format of: HIS/xxxx/xx/xx/xxxxx/C).
- Multilog-IS.
   (A Multilog-IS model has a part-number in the format of: MLISn/n/n/IS/n, where 'n' is a variable length option field).
- Intelligens.
   (An Intelligens model has a part-number in the format of: H95/xxxxxxx/xxxxxx/IS).
- COMLog-IS.
   (A COMLog-IS model has a part-number in the format of: H95/xxxxxxx/xxxxx/lS).

Refer to the drawing MDEX-170-0006, reproduced on the following six pages, for details of the equipment that can be interconnected, including the entity parameters of the equipment.





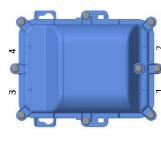


## Sensor (HWM RadarSens) Model Number S170

Logger (HWM ISLog) Model Number HIS

S170	/zzzzy	×/	/ww/	/IS	/t	SIH	xxxxx/	XX/	xxxxx/	×/
Product Type and Input/Output Project Number Options	Input/Output Options	Hardware Variant	Software Settings	Safety Accreditation	Branding	Product Type No and Safety Designation	Antenna and Input/Output Options	Shipping Spec.	Modem Options	Model T
Product Type	- 'S170' ident	'S170' identifies the unit as belonging to the 'RadarSens' product family.	nging to the 'Rada	rSens' product fan	.kljv.	Product Type	<ul> <li>HIS' identifies the unit as belonging to the 'ISLog' or 'COMLog 2 IS' prod</li> </ul>	as belonging to the	'ISLog' or 'COMLog	S IS' prod
Input/Output Option	ı I	This controls variations in connectorisation and	ctorisation and ca	cable length.		Antenna and Input/ -	<ul> <li>This controls variations in logger configuration.</li> </ul>	in logger configure	ttion.	
	v a si 'zzzz'	zzzz' is a variable length field which encodes the approximate cable length (in meters).	hich encodes the	approximate cable	length (in meters).	Output Option	'x' is a single channel field which indicates antenna type (HWM use only)	eld which indicates	antenna type (HWM)	use only)
	The field is	The field is only used for option $Y = G$ ; When $Y = G$ it is blank.	y' = G'; When $y'$	y' = C' it is blank.	135 - 0 35m		xxx' field is used to define logger connections (up to 3 locations selectab	ne logger connect	ions (up to 3 locations	selectab
	OOIII (IIIIAA)	Ichigin). Ivi is used a	s decilinal politi. e	.g., 101v1 - 1011, 01			D III any location 1,2 of 4 indicates Radar Sens Input.	4 Indicates Radar	Sens Input.	

										_
/zzzzy	×/	ww/	SI/	1,	HIS	xxxxx/	XX/	xxxxx/	×	
nput/Output Options	Hardware Variant	Software Settings	Safety Accreditation	Branding	Product Type No and Safety Designation	Antenna and Shippi Input/Output Options Spec.	Shipping Spec.	Modem Options	Model Type	
- 'S170' ideni	<ul> <li>- 'S170' identifies the unit as belonging to the 'RadarSens' product family.</li> </ul>	nging to the 'Radaı	rSens' product fan	yly.	Product Type	<ul> <li>"HIS" identifies the unit as belonging to the "ISLog" or "COMLog 2 IS" product family</li> </ul>	as belonging to the	· ISLog' or 'COMLog'	2 IS' product fam	Ξ̈́
<ul><li>This control</li></ul>	<ul> <li>This controls variations in connectorisation and cable length.</li> </ul>	ctorisation and cal	ble length.		Antenna and Input/	<ul> <li>This controls variations in logger configuration.</li> </ul>	in logger configur	ation.		
v szzz, is a v	zzzz' is a variable length field which encodes the approximate cable length (in meters).	hich encodes the	approximate cable	length (in meters).	Output Option	'x' is a single channel field which indicates antenna type (HWM use only).	eld which indicate:	s antenna type (HWM	use only).	
The field is 30m (max l	The field is only used for option $'y'='G'$ ; When $'y'='G'$ it is blank. 30m (max length). 'M' is used as decimal point. e.g., $10M=10m$ , $0M35=0.35m$ .	'y' = 'G'; When 'y' s decimal point. e.	= 'C' it is blank. g., 10M = 10m, 0N	135 = 0.35m.		'xxx' field is used to define logger connections (up to 3 locations selectable). 'D' in any location 1,2 or 4 indicates RadarSens input.	īne logger connect r 4 indicates Rada	lions (up to 3 locations r Sens input.	selectable).	
'y' is a sing 'C' indicate	y is a single character field, used as follows: C indicates a sensor with bulkhead connector is supplied.	ed as follows: head connector) is	s supplied.		Shipping Spec.	'x' is a single channel field which indicates digital connector (HWM use only). – 'xx' (customer specific, HWM use only).	eld which indicate: HWM use only).	s digital connector (HW	/M use only).	
- 'X' is an enu	or indicates a serior (with captive cable) is supplied.  'x' is an enumerator (set from 1 to 4) identifying the hardware variant (HWM use only).	ive cable) is supplited to 4) identifying the	lled. e hardware variant	t (HWM use only).	Modem Options	- 'xx' is a Modem country code (HWM use only).  'xxxx' is a Modem variant code (HWM use only).	code (HWM use of	only). only).		
<ul><li>ww'is a va for the hos</li></ul>	'ww' is a variable length field which encodes a set of software parameters, required for the host logger device to identify the sensor and its available functions	nich encodes a set entify the sensor ar	of software param nd its available fund	neters, required ctions	Model Type	<ul> <li>W indicates the model is for Waste water (and similar) applications.</li> </ul>	is for Waste water	(and similar) applicati	ons.	
(HWM use only).	· only).					'C' indicates the model is for AMR (Automated Meter Reading)	is for AMR (Autom	lated Meter Reading)		
<ul> <li>'IS' indicate</li> </ul>	<ul> <li>'IS' indicates the model is of the Intrinsically Safe construction.</li> </ul>	Intrinsically Safe	construction.			(and similar) applications.	ıs.			
- "is a mult	T is a multiple character field, used as follows:	sed as follows:								



## Schedule drawing

Certified product. No modifications permitted to this drawing without approval of an ATEX authorised person. Any modifications must also be submitted to the notified body for approval.

All information contained herein	Management, Ty-Coch House,	Llantarnum Park Way, Cwmbran, Gwent, NP44 3AW and shall not	be copied or transmitted without	Environmental Ltd.
Description:	8434 First release.	Port parameters updated to include Multilog IS and Gas logger.	Hydrophobic layer option added.	
PCN:	8434	8813	8965	
Rev:	A	8	o	
Approved:	88	88	88	
Checked: Approved: Rev:	MB	SM	SM	
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31/01/2024	BW	MS		88		
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Halma Water Management TEL: 01633 489479 FAX: 01633 877857						
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4 of 6

'/H' indicates the model is branded as 'HWM' '/F' indicates the model is branded as 'FCS'.

Safety Accreditation

Branding

Hardware Variant Software Settings

# Logger (HWM Intelligens) Model Number H95 Sensor (HWM RadarSens) Model Number S170

S170	/zzzz/	×/	ww/	SI/	/t	H95	xxxxxx/	xxxxxx/	/IS
Product Type and Project Number	Input/Output Options	Hardware Variant	Software Settings	Safety Accreditation	Branding	Product Type	Antenna, Communications & Input/Output Channel Configuration	Modem Options	Safety Designation
Product Type Input/Output Option Hardware Variant Software Settings		'\$170' identifies the unit as belonging to the 'RadarSens' product family.  This controls variations in connectorisation and cable length.  'ZZZZ' is a variable length field which encodes the approximate cable length (in meters).  The field is only used for option 'y = 'G'; When 'y = 'C' it is blank.  30m (max length). 'M' is used as decimal point. e.g., 10M = 10m, 0M35 = 0.35m.  'y is a single character field, used as follows:  'C' indicates a sensor (with bulkhead connector) is supplied.  'G' indicates a sensor (with captive cable) is supplied.  'G' indicates a sensor (with captive cable) is supplied.  'Y' is an enumerator (set from 1 to 4) identifying the hardware variant (HWM use only).  'ww' is a variable length field which encodes a set of software parameters, required for the host logger device to identify the sensor and its available functions (HWM use only).	nging to the 'Rada sctorisation and ca which encodes the 'y = 'G'; When 'y is decimal point. e. ed as follows: head connector) is tive cable) is suppl to 4) identifying the vich encodes a set antify the sensor ar	rSens' product fan ble length. approximate cable = 'C' it is blank. g., 10M = 10m, 0N supplied. ied. e hardware variant of software param	nily. length (in meters). 135 = 0.35m. (HWM use only). eters, required	Product Type Antenna and Input /Output Channel Configuration	<ul> <li>"H95' identifies the unit as belonging to the 'Intelligens' or 'COMLog IS' product family.</li> <li>This controls variations in logger configuration. Channel types required are used to build the logger part-number. The case positions (see below) appear in the order – 1 3 4 5 6 2. Unused positions are coded as a '0'. 'xxxxxxx' field is used to define logger connections (up to 6 locations are selectable; case position 2 may require two characters to encode) of input / output / antenna use (HWM use only).</li> <li>A 'D' in a location indicates a RadarSens input. The fitted interface options are shown on the 'Connections' label on the loader enclosure.</li> </ul>	ing to the 'intelligens configuration.  to build the logger pe pear in the order – 1 or order – 1 or order – 1 or order – 1 or order – 1 order connections (up quire two characters nly).  ar Sens input.	or 'COMLog IS' irt-number. 3 4 5 6 2. to 6 locations are to encode) of input / ons' label on the
Safety Accreditation	ı	'IS' indicates the model is of the Intrinsically Safe construction.	Intrinsically Safe	construction.			The label lists physical port locations and input / output type. A RadarSens compatible port is identified as 'RadarSens'.	ons and input / output lentified as 'RadarSe	type. ns'.
Branding	- 't' is a multi '/H' indicatu '/F' indicate	t' is a multiple character field, used as follows: '/H' indicates the model is branded as 'HWM' '/F' indicates the model is branded as 'FCS'.	used as follows: ded as 'HWM' ded as 'FCS'.			Modem Options Safety Designations	<ul> <li>- 'xxxxxx' is a Modern country and customer settings code (HWM use only).</li> <li>- '/IS' indicates the model is of an Intrinsically Safe construction.</li> </ul>	customer settings co trinsically Safe const	de (HWM use only). ruction.



### Data logger physical port positions



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0	Description:	First release.	Port parameters updated to include Multilog IS and Gas logger.	Hydrophobic layer option added.	
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authorised person. Any modifications must also be submitted to the notified body for approval.	Drawn: Checked: Approved: Rev: PCN:	MB	SM	NS.	
sed perso mitted to	Drawn:	MBC	ВМ	M8	
authoris be sub	Date:	03/04/2023	30/08/2023	31/01/2024	

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Description:	First release.	Port parameters updated to include Multilog IS and Gas logger.	Hydrophobic layer option added.
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RadarSens System Control		Dwg. No:		MDEX-170-0006
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Certified product. No modifications permitted to

Schedule drawing

this drawing without approval of an ATEX

Sensor (HW	/M RadarSens)	Sensor (HWM RadarSens) Model Number S170	<u>S170</u>				<u>Loggel</u>	r (HWM Multil	Logger (HWM Multilog IS) Model Number MLIS	Jumber MLIS	
S170	Izzzzy	x/	/ww	SI/	/t	MLIS	L	l/n	u/	SI/	u/
Product Type and Input/Output Project Number Options	Input/Output Options	Hardware Variant	Software Settings	Safety Accreditation	Branding	Product Type No and Sequential	Sequential Variant	Shipping	Modem Code Safety	Safety	Branding
							Number	opec.			
Product Type	<ul><li>– 'S170' ident.</li></ul>	'S170' identifies the unit as belonging to the 'RadarSens' product family	ınging to the 'Radε	rrSens' product far	nily.						
Input/Output Option		<ul> <li>This controls variations in connectorisation and cable length.</li> </ul>	sctorisation and ca	ble length.		Product Type –	<ul> <li>'MLIS' identifies the unit as belonging to the 'Multilog IS' product family.</li> </ul>	the unit as belon	ging to the 'Multilo	g IS' product fami	·,

zzzy	×	ww/	/IS	/t	MLIS	L	lu/	lu/	SI/	l/
put/Output ptions	Hardware Variant	Software Settings	Safety Accreditation	Branding	Product Type No and Project Number	Sequential Variant Number	Shipping Spec.	Modem Code	Safety Accreditation	Branding
<ul><li>– 'S170' ident</li></ul>	'S170' identifies the unit as belonging to the 'RadarSens' product family.	inging to the 'Radar	Sens' product fam	ily.						
- This control	<ul> <li>This controls variations in connectorisation and cable length</li> </ul>	ectorisation and cab	ile length.		Product Type	- 'MLIS' identifies the unit as belonging to the 'Multilog IS' product family.	he unit as belong	ging to the 'Multilog	g IS' product famil	`
'zzzz' is a v	ariable length field w	which encodes the a	approximate cable	length (in meters).	zzzz' is a variable length field which encodes the approximate cable length (in meters). Sequential Variant	- 'n'. This controls variations of the logger configuration.	variations of the l	logger configuratio	Ċ.	
The field is 30m (max I	The field is only used for option 'y' = 'G'; When 'y' = 'C' it is blank. 30m (max length). 'M' is used as decimal point. e.g., 10M = 10m, 0M35 = 0.35m.	i 'y' = 'G'; When 'y' = as decimal point. e.c	<ul><li>'C' it is blank.</li><li>1., 10M = 10m, 0M.</li></ul>	35 = 0.35m.	Number	It identifies the bu (This is number is	ilid variant numbe s an unintelligent p	It identifies the build variant number of the unit. (HWM use only). (This is number is an unintelligent part of the model number; a new number	M use only). number; a new nu	mber
'y' is a singl	' is a single character field, used as follows:	sed as follows:	700			is assigned, whenever required, for that has not previously been built.)	never required, fo ously been built.)	is assigned, whenever required, for a model with a variation of interfaces that has not previously been built.)	ariation of interfac	es
G indicate:	Gillidicates a serisor (with purificad confidency) is supplied. G'indicates a sensor (with captive cable) is supplied.	tive cable) is supplie	supplied. ed.			The fitted interfac	e options are sho	The fitted interface options are shown on the 'Connections' label on the	ctions' label on th	Φ
– 'x' is an enu	'x' is an enumerator (set between 1 to 4) identifying the hardware variant (HWM use only).	en 1 to 4) identifying	g the hardware var	iant (HWM use onl	ly).	logger enclosure.			7 7 7	
- wwisava	'ww' is a variable length field which encodes a set of software parameters, required for the host loaner device to identify the senear and its available functions.	hich encodes a set	of software paramid its available fund	eters, required		A RadarSens con	ysical port location in patible port is id-	ine label lists physical port locations and input / output type. A RadarSens compatible port is identified as 'RadarSens'.	out type. Sens'.	
(HWM use only).	only).				Shipping Spec	<ul> <li>'/n' is a customer specific code (HWM use only).</li> </ul>	specific code (H)	WM use only).		
<ul><li>'IS' indicate</li></ul>	<ul> <li>'IS' indicates the model is of the Intrinsically Safe constructi</li> </ul>	e Intrinsically Safe c	onstruction.		Modem Code	- '/n' is a Modem country and customer settings code (HWM use only).	ountry and custon	ner settings code (	(HWM use only).	

Safety Designations - '//S' indicates the model is of an Intrinsically Safe construction.

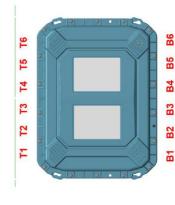
'/H' indicates the model is branded as 'HWM' '/F' indicates the model is branded as 'FCS'.

Branding

Safety Accreditation

Branding

Hardware Variant Software Settings 't' is a multiple character field, used as follows: '/H' indicates the model is branded as 'HWM' '/F' indicates the model is branded as 'FCS'.



## Schedule drawing

Certified product. No modifications permitted to this drawing without approval of an ATEX authorised person. Any modifications must also be submitted to the notified body for approval.

All information contained herein	Management, Ty-Coch House,	Llantarnum Park Way, Cwmbran, Gwent, NP44 3AW and shall not	be copied or transmitted without	Environmental Ltd.
Description:	First release.	Port parameters updated to include Multilog IS and Gas logger.	Hydrophobic layer option added.	
PCN.	8434	8813	8965	
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RadarSens System Control

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### 5: Installation and Maintenance

### **Safety Considerations**

Certification of RadarSens includes the following schemes (dependant on model):







Check the labels of the equipment for the presence of any required approvals marks prior to their use.

**Note**: Where the terms "Intrinsically Safe" or "ATEX" are used throughout this document, this must be understood to mean the applicable intrinsic safety standards (ATEX, UKEX, IECEx) that are in force in country of installation.

**Note**: The installer is responsible for ensuring the logger and any connected equipment are certified for use and are also compatible for interconnection.

### Note:

Before continuing, carefully read and follow the non-ATEX, general safety information in the "Safety Warnings and Approvals Information" document supplied with the product. This document provides additional ATEX-related safety information. Retain all documents for future reference.

### Before using this product:

- Make a risk assessment of the installation site and expected work activity.
- Installations in a hazardous environment (e.g., ATEX) must be carried out by appropriate technicians with suitable training for that environment.
- It is the responsibility of the end user to take suitable precautions to prevent exposure to aggressive chemicals that may attack the metals or polymeric materials used in the construction of this equipment.

The following materials are used in the construction of this equipment:

Enclosure: PC/ABS.Enclosure Labels: Polyester.

o Hydrophobic Cover: PTFE ; (Optional).

o Gasket: Silicone.

Connectors: Nylon / Macromelt.

Cables: PVC.Gland: Nylon.

Fasteners: Stainless Steel.
Bracketry: Stainless Steel.

- Ensure any tools necessary for installation are suitable for use within the hazardous environment.
- Ensure suitable PPE (personal protective equipment) is used and that safe working practices are followed during installation and any maintenance.
- Check with the site owner or supervisor for any additional safety requirements before commencing work.
- Ensure any communications device being used to assist in the install or setup of the logger is also suitable for use
  in the hazardous environment in which you are working.

### Before entering hazardous area:

- Check the sensor and apparatus have the right approvals and certifications for use within the intended installation environment.
- Confirm the equipment has suitable ATEX markings and is being operated within its ATEX limits.
- Check the port parameters of the relevant logger interface and the equipment to be attached. Confirm they are suitable for interconnection.
- Check the equipment includes a suitable cable with connector attached for interconnecting RadarSens to the logger interface. A water-tight connection is required.

### Installation of Equipment:

Installation Accessories, including brackets for mounting the unit, are available to suit most installation situations. Examples are shown below.





For safe and secure installation, adhere to the safety warnings (section 6) and always use bracket solutions if required from HWM when installing RadarSens.

For additional guidance of installation of RadarSens, refer to the RadarSens User Guide (Part 1 of 2), document MAN-170-0001.

RadarSens is installed in conjunction with a compatible HWM logger device. Refer to the related documentation for the logger, including the user guide and safety supplement. Follow the instructions and warnings contained within each of the user guides and the product labelling during installation and maintenance of the equipment.

### **Connection and Commissioning:**

Whilst adhering to the safety measures within this document, connect the equipment and commission the RadarSens as described in the RadarSens user guide.

### Safety of Operation:

Once installed, the unit has been certified to the appropriate standards for continuous operation without user intervention.

### Maintenance:

The RadarSens may be cleaned as a maintenance task. Adhere to the safety warnings (section 6) and within the documentation and labelling when performing any maintenance.

The RadarSens has no internal serviceable parts. Do not attempt to disassemble the unit.

### 6: Warnings



### Warnings:

- DO NOT OPEN WHEN EXPLOSIVE ATMOSPHERE IS PRESENT.
- POTENTIAL ELECTROSTATIC CHARGING HAZARD. DO NOT RUB WITH A DRY CLOTH.
   WHEN CLEANING, USE A DAMP CLOTH THAT CAN HAVE A MILD CLEANING SOLUTION.
- TAKE STEPS TO MINIMISE BUILD UP OF ELECTROSTATIC CHARGES, SUCH AS INSTALLING RADARSENS IN A LOCATION PROTECTED FROM DIRECT AIRFLOW.
- THE UNIT MUST BE INSTALLED IN A SUITABLE LOCATION. CONSIDERATION MUST BE GIVEN TO LOW
  HUMIDITY SITES TO AVOID THE GENERATION OF STATIC ELECTRICITY. ADDITIONAL PROTECTION
  MEASURES MAY BE REQUIRED.
- WHEN MAKING A RISK ASSESSMENT, CONSIDER ANY STEPS REQUIRED TO PREVENT ELECTROSTATIC DISCHARGE TO RADARSENS OR SURROUNDING EQUIPMENT DURING INSTALLATION.
- DURING INSTALLATION, USE INSULATED TOOLS AND EQUIPMENT, TO PREVENT ELECTROSTATIC DISCHARGE.

### 7: Standards and Ratings

RadarSens complies with the following standards:

IEC 60529:1991 Degrees of protection provided by enclosures (IP Code).

- RadarSens Ingress Protection level: IP66/68 (1.5m for 1 hr).

EN 60079-0:2018 Explosive atmospheres - Equipment. General requirements.

EN 60079-11:2012 Explosive atmospheres - Equipment protection by intrinsic safety "i".

EN 61010-1:2010/A1:2019 Safety requirements for electrical equipment for measurement, control, and laboratory

use - General requirements.

EN 62368-1:2014/A11:2017 Audio/video, information and communication technology equipment

- Safety requirements.

EN 62479:2010 Assessment of the compliance of low power electronic and electrical equipment with

the basic restrictions related to human exposure to electromagnetic fields

(10 MHz to 300 GHz).

EN 62311:2008 Assessment of electronic and electrical equipment related to human exposure

restrictions for electromagnetic fields (0 Hz - 300 GHz).

EN 55032:2015 Electromagnetic compatibility of multimedia equipment. Emission Requirements.

EN 55035:2017 Electromagnetic compatibility of multimedia equipment. Immunity requirements.

EN 301 489-1 V2.2.3 Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic

Compatibility (EMC) standard for radio equipment and services; Part 1: Common

technical requirements.

EN 301 489-3 V1.1.1 ElectroMagnetic Compatibility (EMC) standard for radio equipment and services;

Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies

between 9 kHz and 246 GHz; Harmonised Standard covering the essential

requirements of article 3.1(b) of Directive 2014/53/EU.

EN 305 550 V2.1.0 Short Range Devices (SRD); Radio equipment to be used in the 40 GHz to 246 GHz

frequency range; Harmonised Standard for access to radio spectrum.

EN 305 550-1 V1.2.1 Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range

Devices (SRD); Radio equipment to be used in the 40 GHz to 246 GHz frequency

range; Part 1: Technical characteristics and test methods.

EN 305 550-2 V1.2.1 Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range

Devices (SRD); Radio equipment to be used in the 40 GHz to 246 GHz frequency range; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the

R&TTE Directive.

Notified Body Opinion. Radio. Complies with the essential requirements of article 3.2 of Directive 2014/53/EU.

(CE 0682) (Certificate Registration No: T818606L-01-TEC).

EN IEC 63000:2018 Technical documentation for the assessment of electrical and electronic products with

respect to the restriction of hazardous substances.

If further support or assistance is required, please contact HWM Technical Support on 01633 489479 (option 5) or e-mail: cservice@HWM-Water.com

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