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

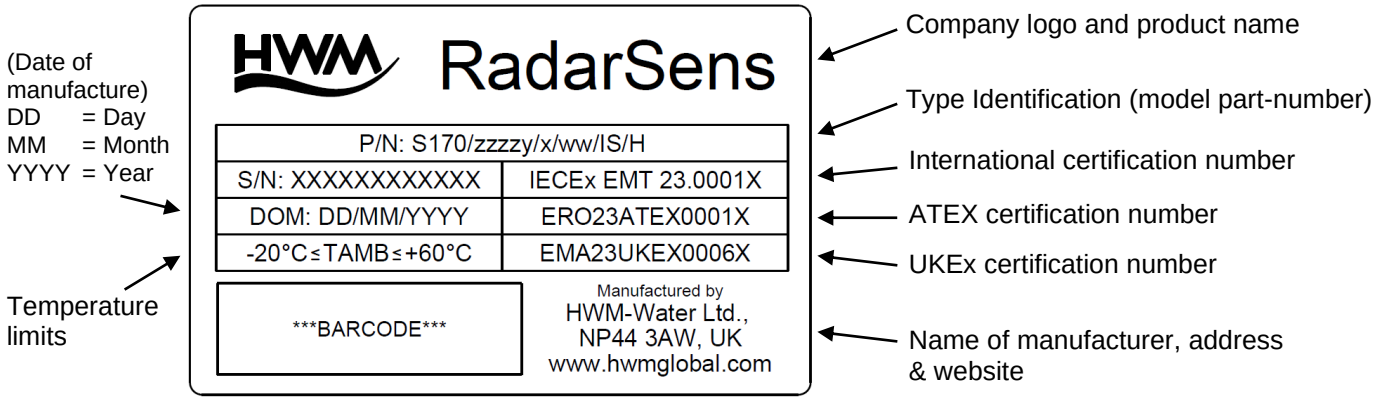
1: Introduction.

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

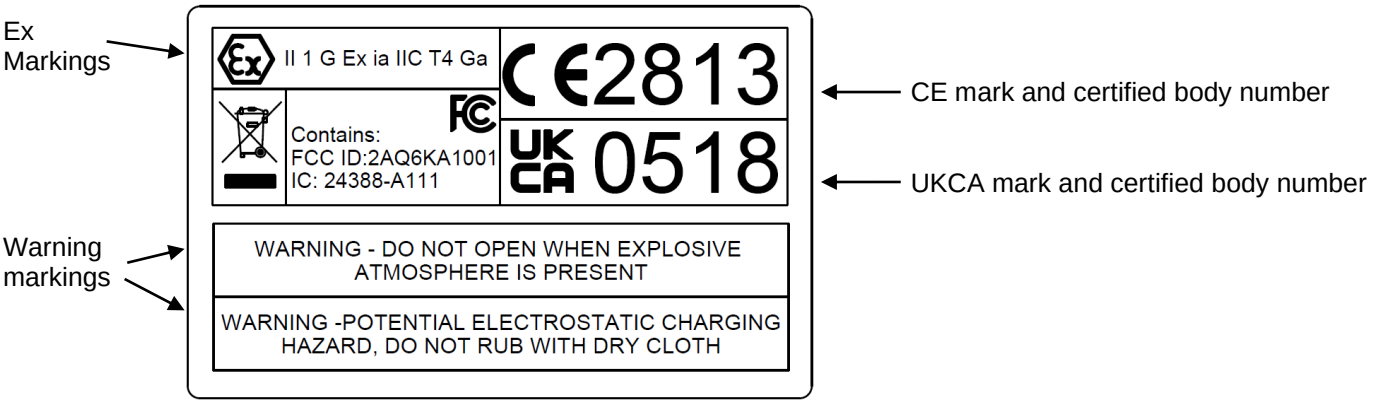
> **Warning:** This manual contains important safety and operating information.
> Please read, understand and follow the instructions / warnings contained in this manual.

2: Product marking

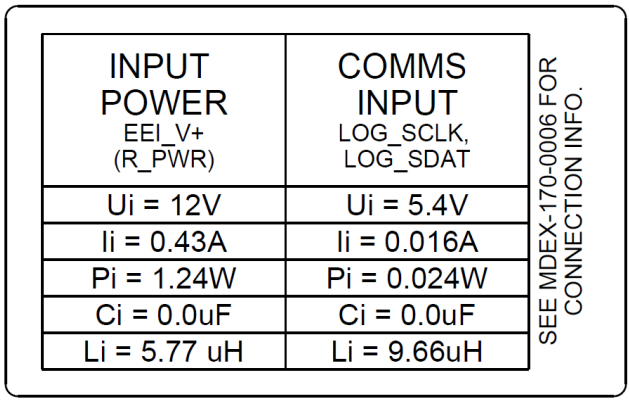
Identity Label (HWM branded product):



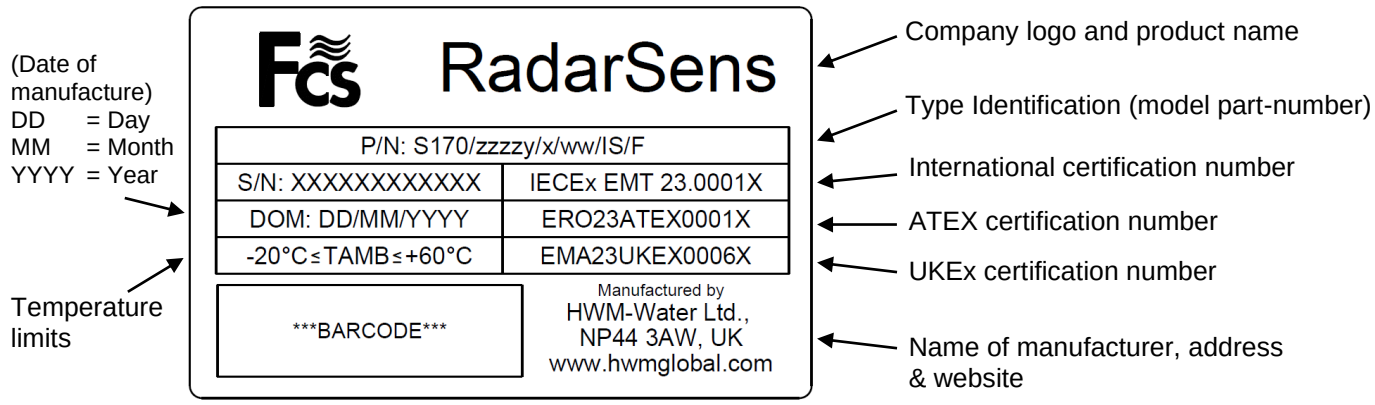
Approvals Marking Label (HWM branded product):



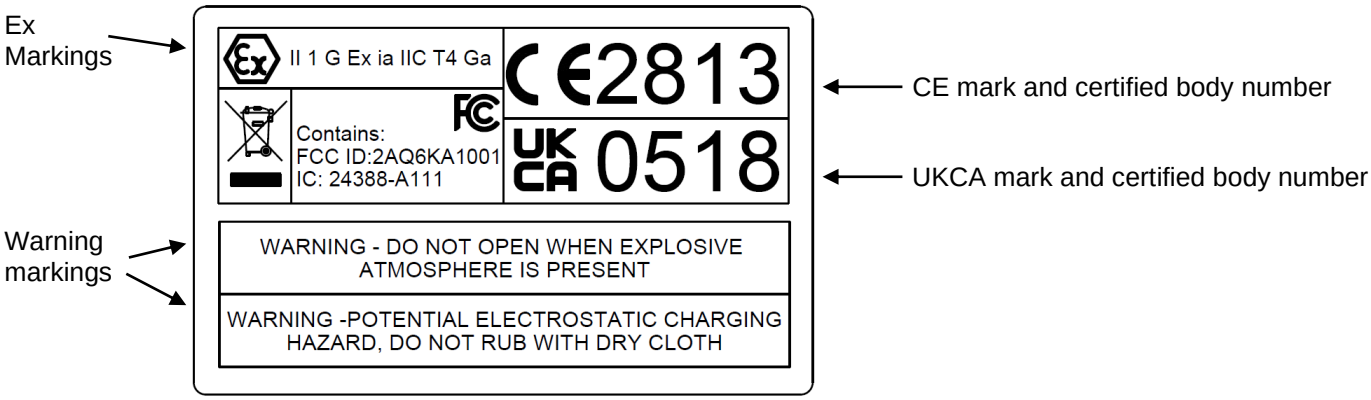
Entity Parameters Label (HWM branded product):



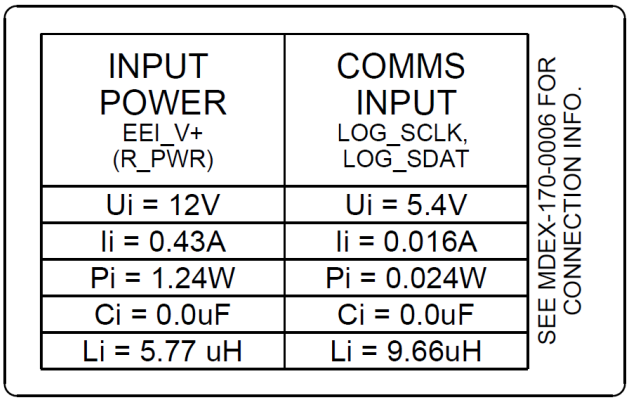
Identity Label (FCS branded product):



Approvals Marking Label (FCS branded product):



Entity Parameters Label (FCS branded product):



3: Part Number scheme and nomenclature

A RadarSens model has a part-number in the format of **S170/zzzzy/x/ww/IS/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/xxxxx/xx/xxxxxx/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/xxxxxx/IS**).

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.

Design certification:
HWM RadarSens S170/zzzzy/x/ww/IS/t

EN 60079-0:2018, EN 60079-11:2012
Group: IIC
Equipment protection level: Ga
Temperature class: T4
Intrinsic safety: ia

Device marking requirements:-

II 1 G Ex ia IIC T4 Ga

$-20^{o}C <= T_{amb} <= +60^{o}C$

Certificate numbers:

IECEx EMT 23.0001X
ERO23ATEX0001X
EMA23UKEX0006X

Warnings on device and operators manual (ATEX related):

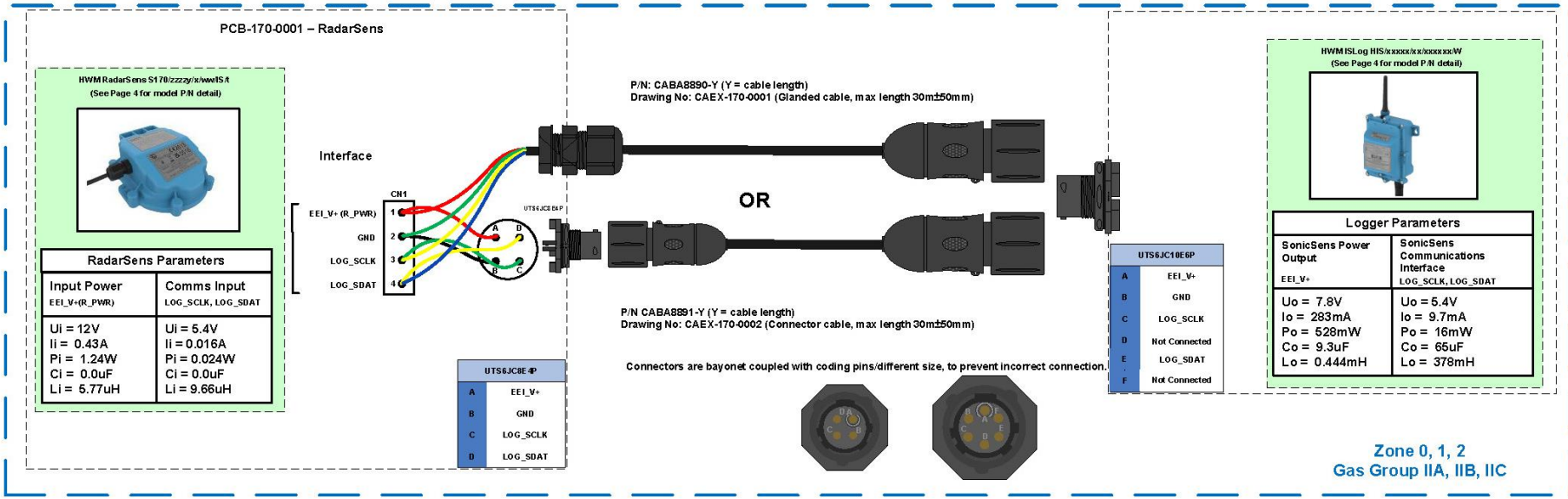
WARNING - POTENTIAL ELECTROSTATIC CHARGING HAZARD, DO NOT RUB WITH A DRY CLOTH.
(In accordance with 29.12 EN 60079-0:2018)

WARNING - DO NOT OPEN WHEN EXPLOSIVE ATMOSPHERE IS PRESENT.
(In accordance with 12.3 EN 60079-11:2012)

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.

See page 4 for Full Model Number



Date:	Drawn:	Checked:	Approved:	Rev:	PCN:	Description:
03/04/2023	JBM	BW	BB	A	8434	First release.
30/08/2023	BW	SM	BB	B	8813	Port parameters updated to include Multilog IS and Gas logger.
31/02/2024	BW	SM	BB	C	8955	Hydrophobic layer option added.

Halma Water Management
TEL: 01633 489479
FAX: 01633 877857

Scale:	NTS
Date:	31/01/2024
Drawn:	BW
Checked:	SM
Approved:	BB

Title: **RadarSens System Control**

Dwg. No:	Rev:	Page:
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Design certification:
HWM RadarSens S170/zzzzy/x/ww/IS/t

EN 60079-0:2018, EN 60079-11:2012
Group: IIC
Equipment protection level: Ga
Temperature class: T4
Intrinsic safety: ia

Device marking requirements:-

II 1 G Ex ia IIC T4 Ga

$-20^{o}C <= T_{amb} <= +60^{o}C$

Certificate numbers:

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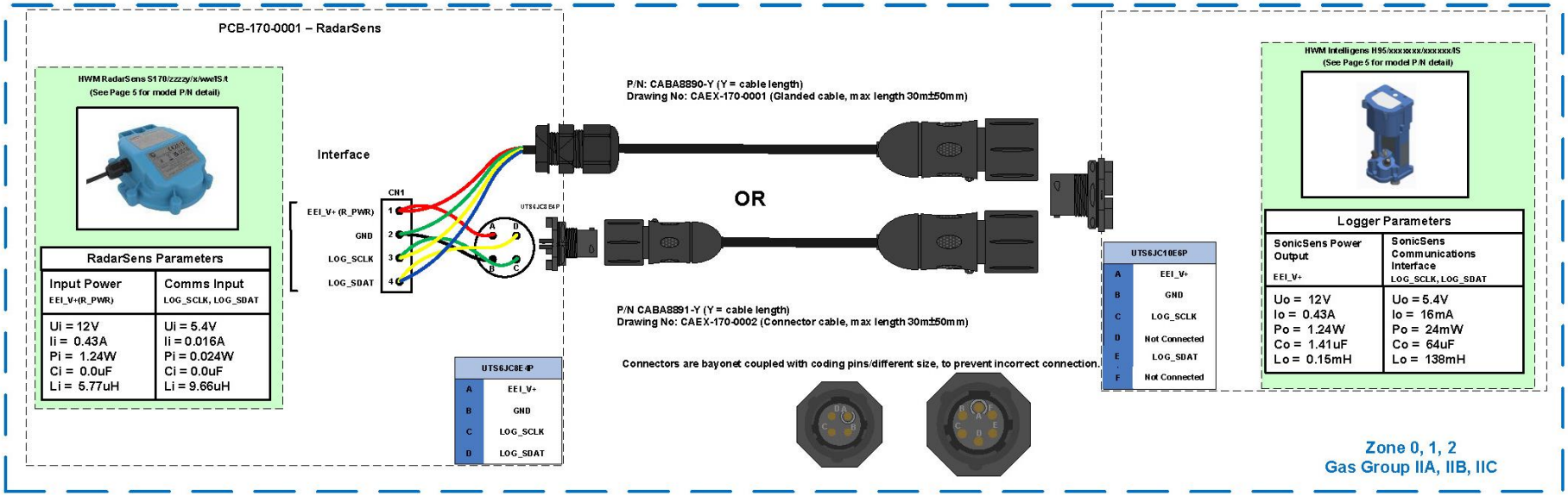
See page 5 for Full Model Number



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Title: **RadarSens System Control**

Dwg. No:	Rev:	Page:
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Design certification:
HWM RadarSens S170/zzzzy/x/ww/IS/t

EN 60079-0:2018, EN 60079-11:2012
Group: IIC
Equipment protection level: Ga
Temperature class: T4
Intrinsic safety: ia

Device marking requirements:-

II 1 G Ex ia IIC T4 Ga

$-20^{o}C <= T_{amb} <= +60^{o}C$

Certificate numbers:

IECEx EMT 23.0001X
ERO23ATEX0001X
EMA23UKEX0006X

Warnings on device and operators manual (ATEX related):

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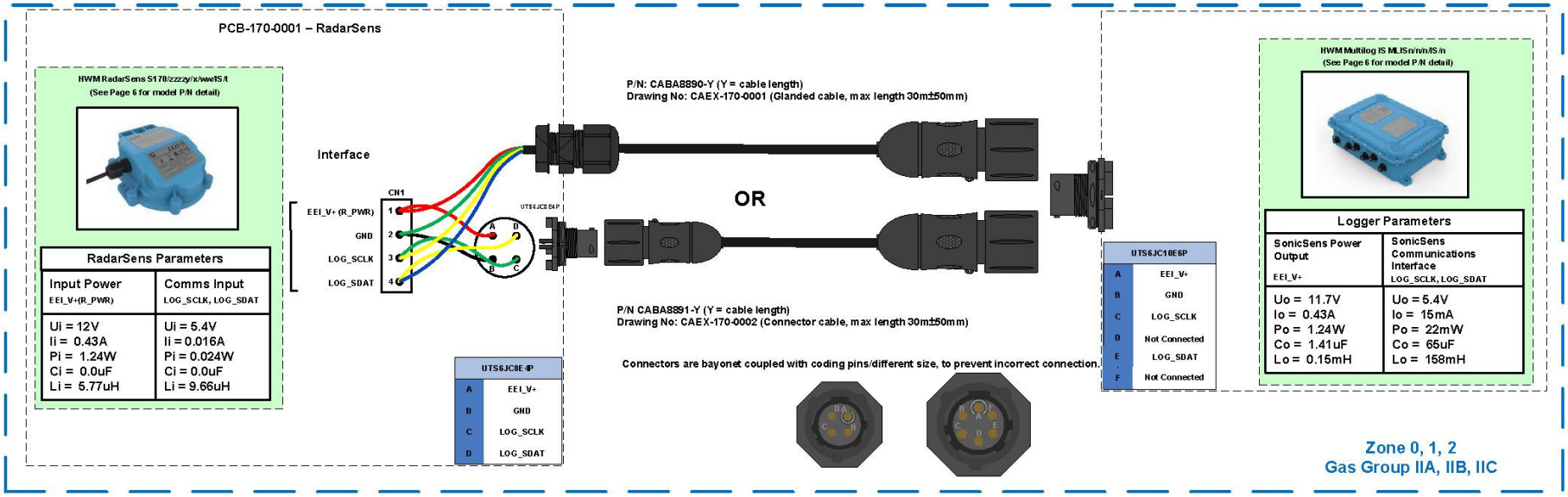
(In accordance with 29.12 EN 60079-0:2018)

WARNING - DO NOT OPEN WHEN EXPLOSIVE ATMOSPHERE IS PRESENT.
(In accordance with 12.3 EN 60079-11:2012)

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.

See page 6 for Full Model Number



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Scale:	NTS
Date:	31/01/2024
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Checked:	SM
Approved:	BB

Title: **RadarSens System Control**

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Sensor (HWM RadarSens) Model Number S170

S170	/zzzzy	/x	/ww	/IS	/t
Product Type and Project Number	Input/Output Options	Hardware Variant	Software Settings	Safety Accreditation	Branding

Product Type – 'S170' identifies the unit as belonging to the 'RadarSens' product family.

Input/Output Option – 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.

Hardware Variant – 'x' is an enumerator (set from 1 to 4) identifying the hardware variant (HWM use only).

Software Settings – '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).

Safety Accreditation – 'IS' indicates the model is of the Intrinsically Safe construction.

Branding – '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'.

Logger (HWM ISLog) Model Number HIS

HIS	/xxxxx	/xx	/xxxxxx	/x
Product Type No and Safety Designation	Antenna and Input/Output Options	Shipping Spec.	Modem Options	Model Type

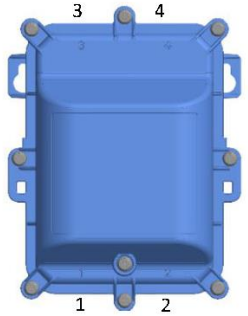
Product Type – 'HIS' identifies the unit as belonging to the 'ISLog' or 'COMLog 2 IS' product family

Antenna and Input/Output Option – This controls variations in logger configuration.
'x' is a single channel field which indicates antenna type (HWM use only).
'xxx' field is used to define logger connections (up to 3 locations selectable).
'D' in any location 1,2 or 4 indicates RadarSens input.
'x' is a single channel field which indicates digital connector (HWM use only).

Shipping Spec. – 'xx' (customer specific, HWM use only).

Modem Options – 'xx' is a Modem country code (HWM use only).
'xxxx' is a Modem variant code (HWM use only).

Model Type – 'W' indicates the model is for Waste water (and similar) applications.
'C' indicates the model is for AMR (Automated Meter Reading) (and similar) applications.



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.

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31/01/2024	BW	SM	BB	C	8955	Hydrophobic layer option added.

Halma Water Management
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FAX: 01633 877857

Scale:	NTS
Date:	31/01/2024
Drawn:	BW
Checked:	SM
Approved:	BB

Title: **RadarSens System Control**

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Sensor (HWM RadarSens) Model Number S170

S170	/zzzzy	/x	/ww	/IS	/t
Product Type and Project Number	Input/Output Options	Hardware Variant	Software Settings	Safety Accreditation	Branding

Product Type – 'S170' identifies the unit as belonging to the 'RadarSens' product family.

Input/Output Option – 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.

Hardware Variant – 'x' is an enumerator (set from 1 to 4) identifying the hardware variant (HWM use only).

Software Settings – '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).

Safety Accreditation – 'IS' indicates the model is of the Intrinsically Safe construction.

Branding – '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'.

Logger (HWM Intelligens) Model Number H95

H95	/xxxxxxx	/xxxxxx	/IS
Product Type	Antenna, Communications & Input/Output Channel Configuration	Modem Options	Safety Designation

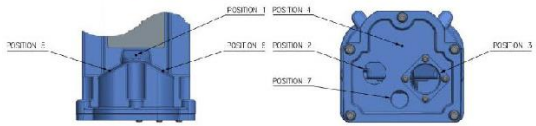
Product Type – "H95' identifies the unit as belonging to the 'Intelligens' or 'COMLog IS' product family.

Antenna and Input /Output Channel Configuration – 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).
A 'D' in a location indicates a RadarSens input.
The fitted interface options are shown on the 'Connections' label on the logger enclosure.
The label lists physical port locations and input / output type.
A RadarSens compatible port is identified as 'RadarSens'.

Modem Options – 'xxxxxx' is a Modem country and customer settings code (HWM use only).

Safety Designations – '/IS' indicates the model is of an Intrinsically Safe construction.

Data logger physical port positions



Schedule drawing

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31/01/2024	BW	SM	BB	C	8955	Hydrophobic layer option added.

Halma Water Management
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Drawn:	BW
Checked:	SM
Approved:	BB

Title: **RadarSens System Control**

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Sensor (HWM RadarSens) Model Number S170

S170	/zzzzy	/x	/ww	/IS	/t
Product Type and Project Number	Input/Output Options	Hardware Variant	Software Settings	Safety Accreditation	Branding

Product Type – 'S170' identifies the unit as belonging to the 'RadarSens' product family.

Input/Output Option – 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.

Hardware Variant – 'x' is an enumerator (set between 1 to 4) identifying the hardware variant (HWM use only).

Software Settings – '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).

Safety Accreditation – 'IS' indicates the model is of the Intrinsically Safe construction.

Branding – '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'.

Logger (HWM Multilog IS) Model Number MLIS

MLIS	n	/n	/n	/IS	/n
Product Type No and Project Number	Sequential Variant Number	Shipping Spec.	Modem Code	Safety Accreditation	Branding

Product Type – 'MLIS' identifies the unit as belonging to the 'Multilog IS' product family.

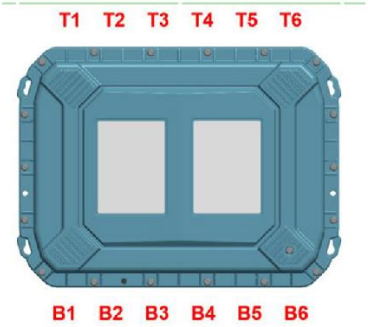
Sequential Variant Number – 'n'. This controls variations of the logger configuration.
It identifies the build variant number of the unit. (HWM use only).
(This is number is an unintelligent part of the model number; a new number is assigned, whenever required, for a model with a variation of interfaces that has not previously been built.)
The fitted interface options are shown on the 'Connections' label on the logger enclosure.
The label lists physical port locations and input / output type.
A RadarSens compatible port is identified as 'RadarSens'.

Shipping Spec – '/n' is a customer specific code (HWM use only).

Modem Code – '/n' is a Modem country and customer settings code (HWM use only).

Safety Designations – '/IS' indicates the model is of an Intrinsically Safe construction.

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



Schedule drawing

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31/01/2024	BW	SM	BB	C	8955	Hydrophobic layer option added.

Halma Water Management
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Title: **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:

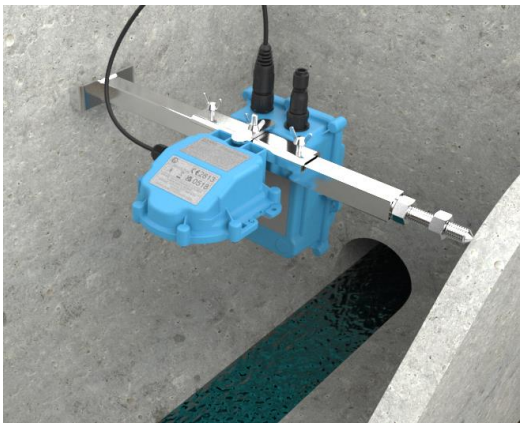
- Make a risk assessment of the installation site and expected work activity.
- Installations in a hazardous environment (e.g., ATEX) must be carried out by appropriate technicians with suitable training for that environment.
- It is the responsibility of the end user to take suitable precautions to 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.
  - Hydrophobic Cover: PTFE ; (Optional).
  - 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.

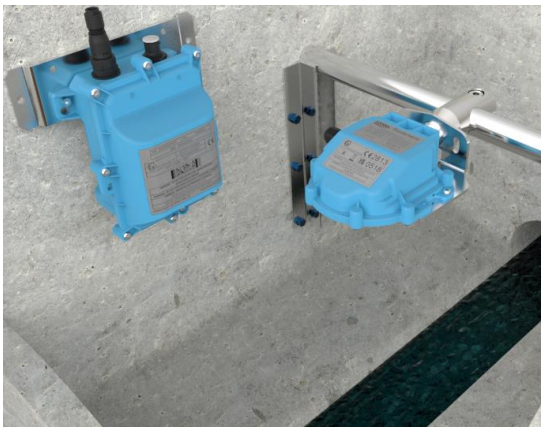
Before entering hazardous area:

- 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. (CE 0682)	Radio. Complies with the essential requirements of article 3.2 of Directive 2014/53/EU. (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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