

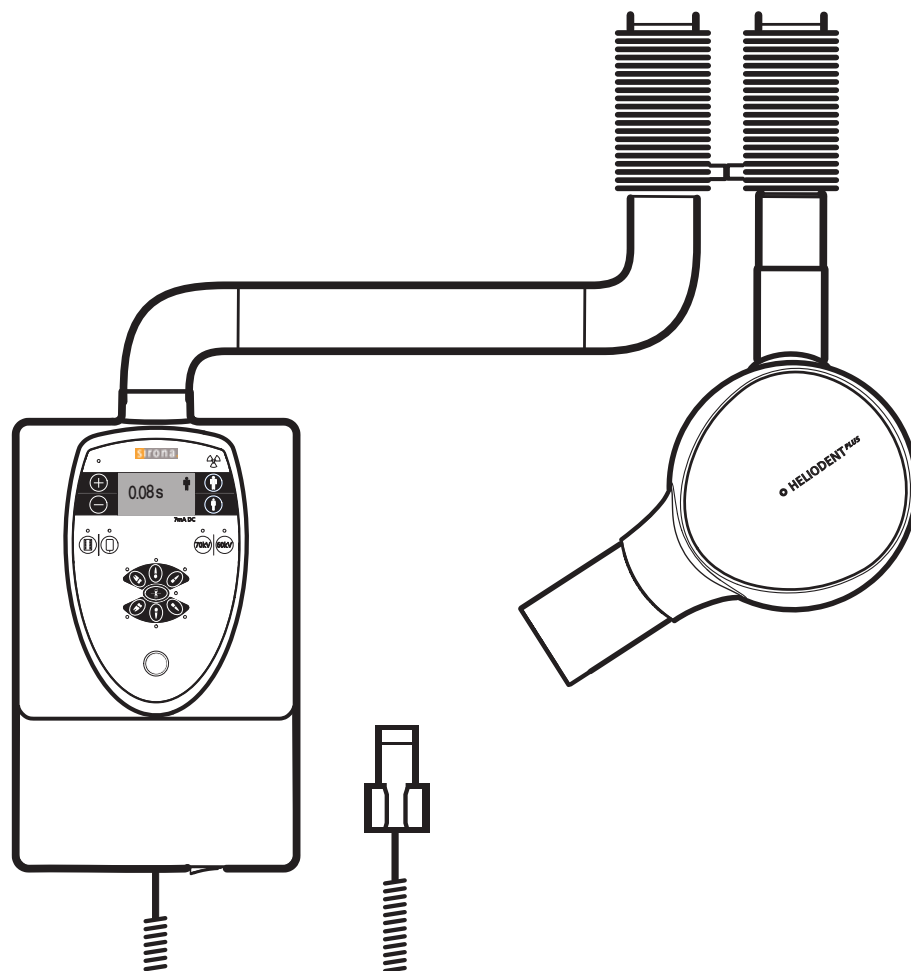
New as of:

09.2009

# HELIODENT<sup>PLUS</sup>

## Installation Requirements

English





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# 1 Prior to installation

## 1.1 Installation options

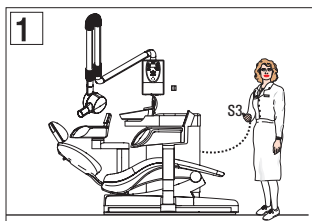
### Designations for release buttons and door contact

- Manual release **S3**
  - Coiled cable
- Release key on the control membrane **S4**
  - Directly connected to control board DX4
- Remote control release key **S9**
  - Integrated in remote control housing
- Door contact (safety circuit) **S7**

### Installation option 1

Release in the treatment room **without** remote control

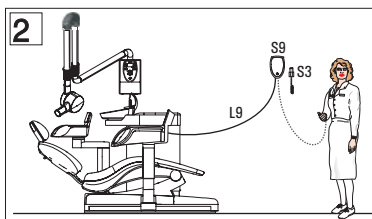
- Release
  - Manual release **S3**



### Installation option 2

Release in the treatment room **with** remote control

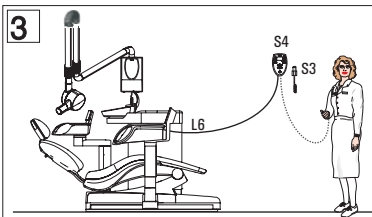
- Release
  - Manual release **S3**
  - or**
  - Remote control release key **S9**



### Installation option 3

Release in the treatment room **with** Remote Timer

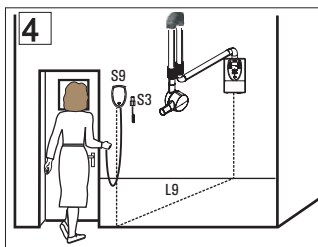
- Release
  - Manual release **S3**
  - or**
  - Release key on the control membrane **S4**



### NOTICE

Length of cable supplied for Remote Timer approx. 10 meters (394") (must not be extended).

Conduit int. dia. at least 12mm (1/2").



#### Installation option 4

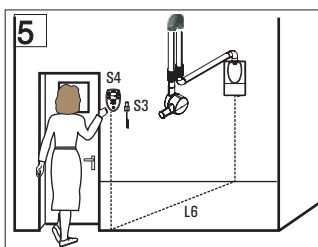
Release outside of the X-ray room **with** remote control

- Release
  - Manual release **S3**
  - or
  - Remote control release key **S9**

#### NOTICE

##### Installation prerequisites

Use of the remote control is permissible only if the yellow X-Ray LED is visible to the operating personnel during radiation release.



#### Installation option 5

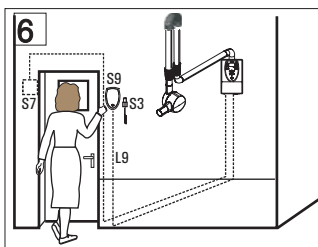
Release outside of the X-ray room **with** Remote Timer

- Release
  - Manual release **S3**
  - or
  - Release key on the control membrane **S4**

#### NOTICE

Length of cable supplied for Remote Timer approx. 10 meters (394") (must not be extended).

Conduit int. dia. at least 12mm (1/2").



#### Installation option 6

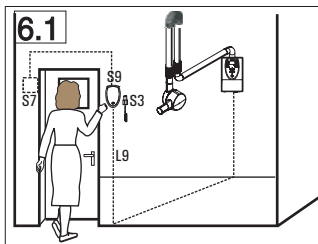
Release outside of the X-ray room **with** remote control, door contact safety circuit

- Door contact
  - Door contact **S7** wired to the wall adapter
- Release
  - Manual release **S3**
  - or
  - Remote control release key **S9**

#### NOTICE

##### Installation requirement

Use of the remote control is permissible only if the yellow X-Ray LED is visible to the operating personnel during radiation release.



#### Installation option 6.1

Release outside of the X-ray room **with** remote control, door contact safety circuit

- Door contact
  - Door contact **S7** wired to the remote control housing
- Release
  - Manual release **S3**
  - or
  - Remote control release key **S9**

## NOTICE

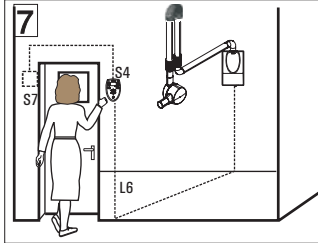
### Installation requirement

Use of the remote control is permissible only if the yellow X-Ray LED is visible to the operating personnel during radiation release.

### Installation option 7

Release outside of the X-ray room **with** Remote Timer, door contact safety circuit

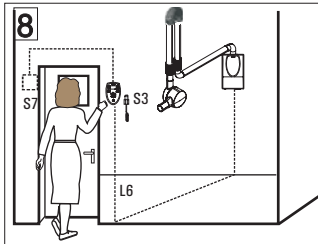
- Door contact
  - Door contact **S7**
- Release
  - Release key on the control membrane **S4**



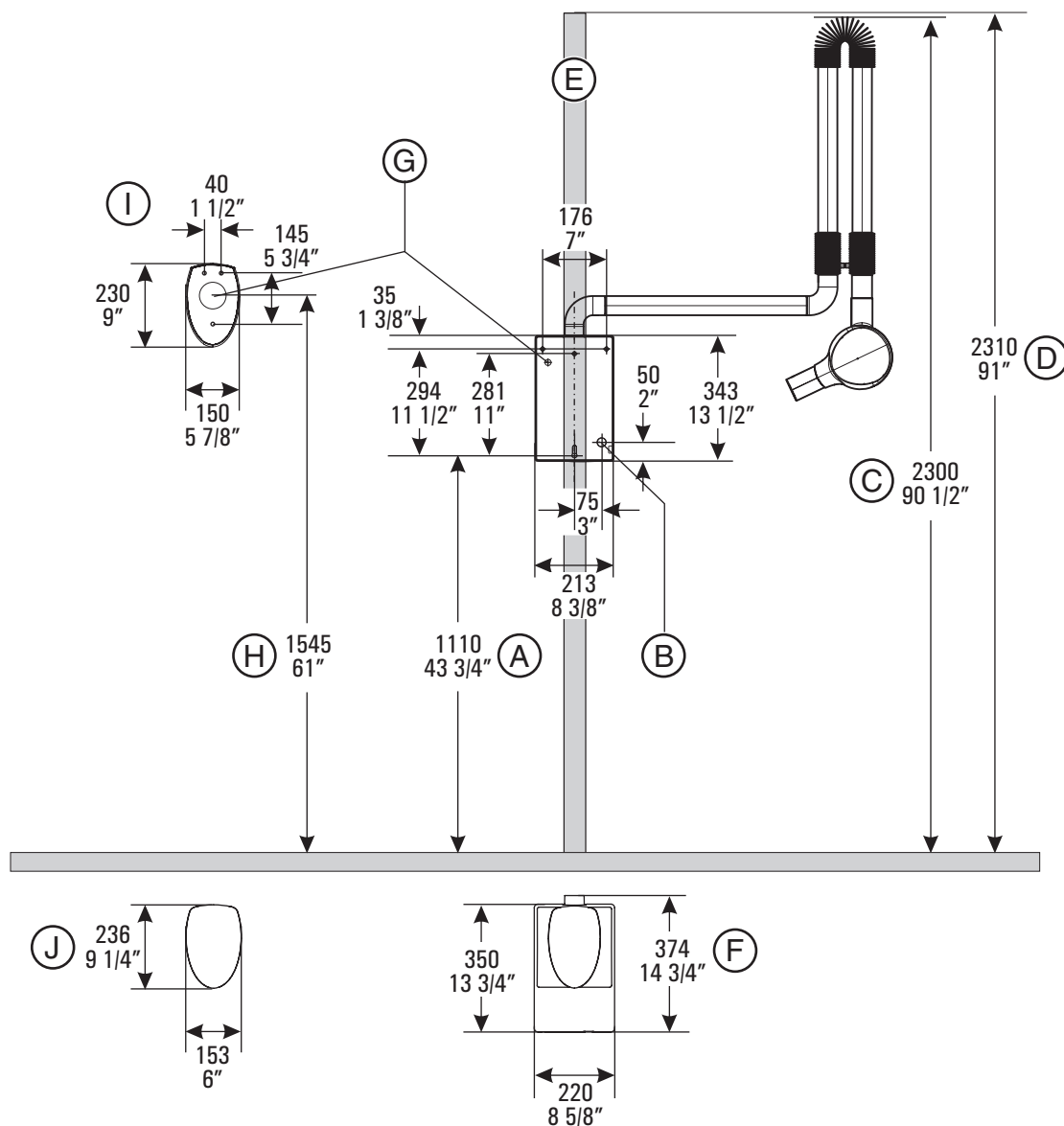
### Installation option 8

Release outside of the X-ray room **with** Remote Timer, door contact safety circuit

- Door contact
  - Door contact **S7** wired to Remote Timer
- Release
  - Manual release **S3**



## 1.2 On-site installation

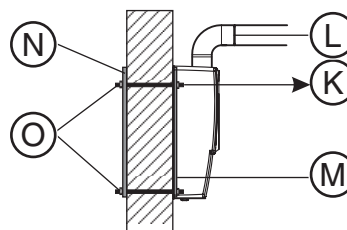


<b>A</b>	Recommended installation height for the wall module
<b>B</b>	Cable bushing for network cable
<b>C</b>	Unit height
<b>D</b>	Ceiling height
<b>E</b>	Wooden beam
<b>F</b>	Wall module cover
<b>G</b>	Cable bushing for remote control or Remote Timer
<b>H</b>	Recommended installation height of remote control or Remote Timer
<b>I</b>	Remote control or Remote Timer
<b>J</b>	Cover for remote control or Remote Timer

## ⚠ CAUTION

### Observe wall properties

In installation situations, the technician is responsible for the assessment of wall properties and selecting the method of attaching the unit to the wall.



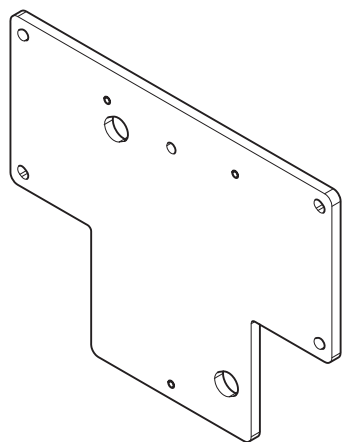
<b>K</b>	Tensile force per screw 3600N if L ≤ 700mm (27 1/2") 4200N if L ≤ 950mm (37 3/8")
<b>L</b>	Length of support arm
<b>M</b>	Mounting plate (supplied)
<b>N</b>	Anchor plate
<b>O</b>	Threaded bolt M8

- The permissible tensile force of the selected attachment must at least equal the tensile force listed above.
- Matching wood screws for wooden beams are included in delivery.
- For all other wall structures, special wall anchors must be purchased from a selected dealer. The wall anchors and screws should be identical for every attachment point.
- Alternatively, an anchor plate can be used as a counter bearing. In this case, M8 threaded rods of the appropriate length for the wall (thickness of the wall + 2 x mounting plate thickness + attachment material) are required.

### Reuse installation sites of old units

It is possible to conceal the installation site of an old unit when installing a HELIODENT<sup>PLUS</sup>.

- For the replacement of vertically mounted old units (e.g. HELIODENT DS, HELIODENT MD, Planmeca Intra) an adapter plate is available for this purpose, REF 62 42 254.
- The drill holes of some vertically mounted units (e.g. Progeny Previa<sup>1</sup>, Gendex 765DC<sup>1</sup>) coincide with the dimensions of the drill holes of the Heliodent<sup>PLUS</sup>. No adapter plate is required.



## NOTICE

Regardless of their prior use, the existing drill holes and wall plugs must comply with the installation regulations and must be checked by the person performing installation.



## NOTICE

The different connection areas of the old units make it necessary to relocate the existing electrical connections (e.g. concealed installation) on-site.



## CAUTION

The on-site electrical installation must be performed according to the valid regulations for medical electrical equipment (DIN VDE 0100-710).

- Cable for remote control or Remote Timer: Conduit  $\varnothing$  int. min. 12 mm (1/2"); requires an excess length of at least 0.25 m (10") at both ends!
- Power cable 3x1.5 mm<sup>2</sup> (AWG 16); required excess length for concealed installation: 0.25m (10").



## CAUTION

Do not install the cables for Remote Timer and power cables in the same conduit.

## NOTICE

The unit can be connected to 120 V (1-phase connection) or to 200 - 240 V (1-phase or 2-phase connection). A (line matching) pretransformer is required for all other voltages.

### For the USA only

#### Power supply:

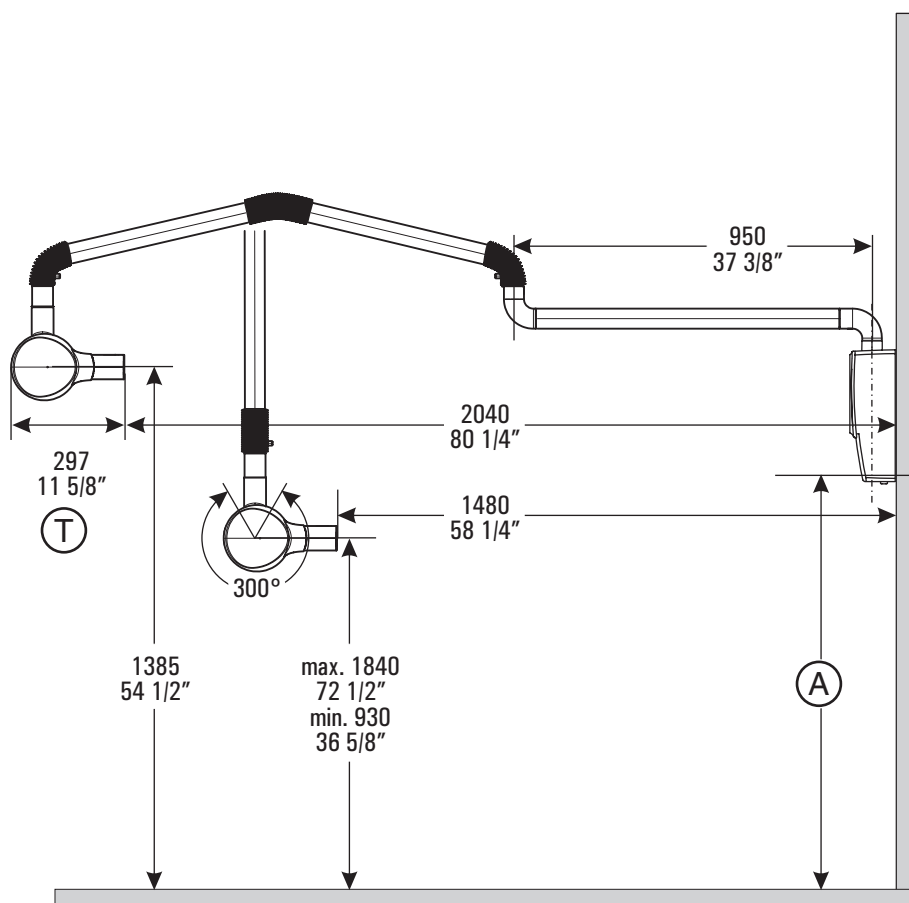
A separate three wire grounded circuit connected directly to the central distribution panel with an over-current protection rated for 20 amperes should be used.

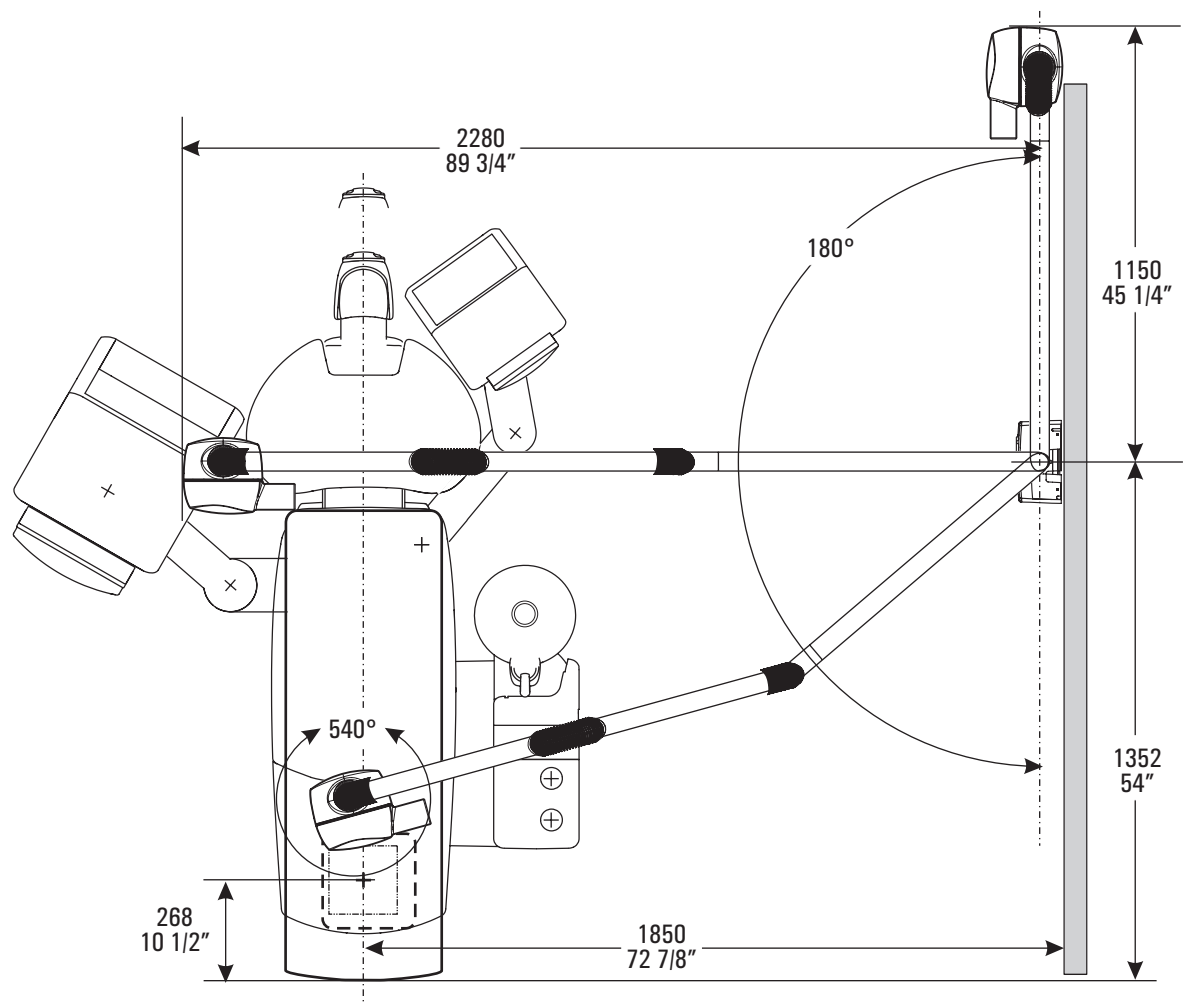
## 2 Dimensions, technical data

### 2.1 Dimensions

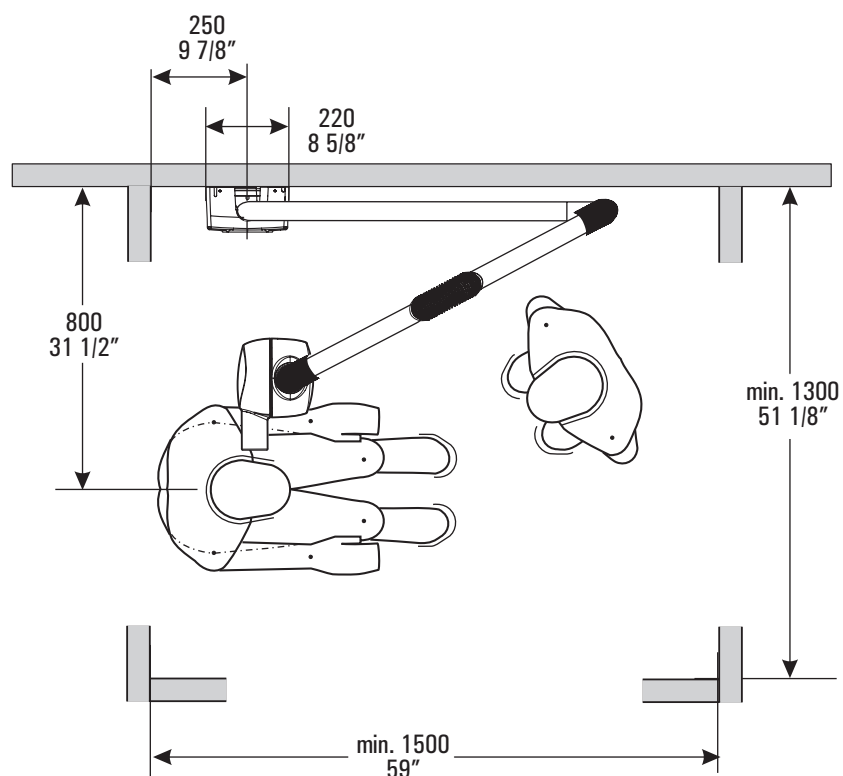
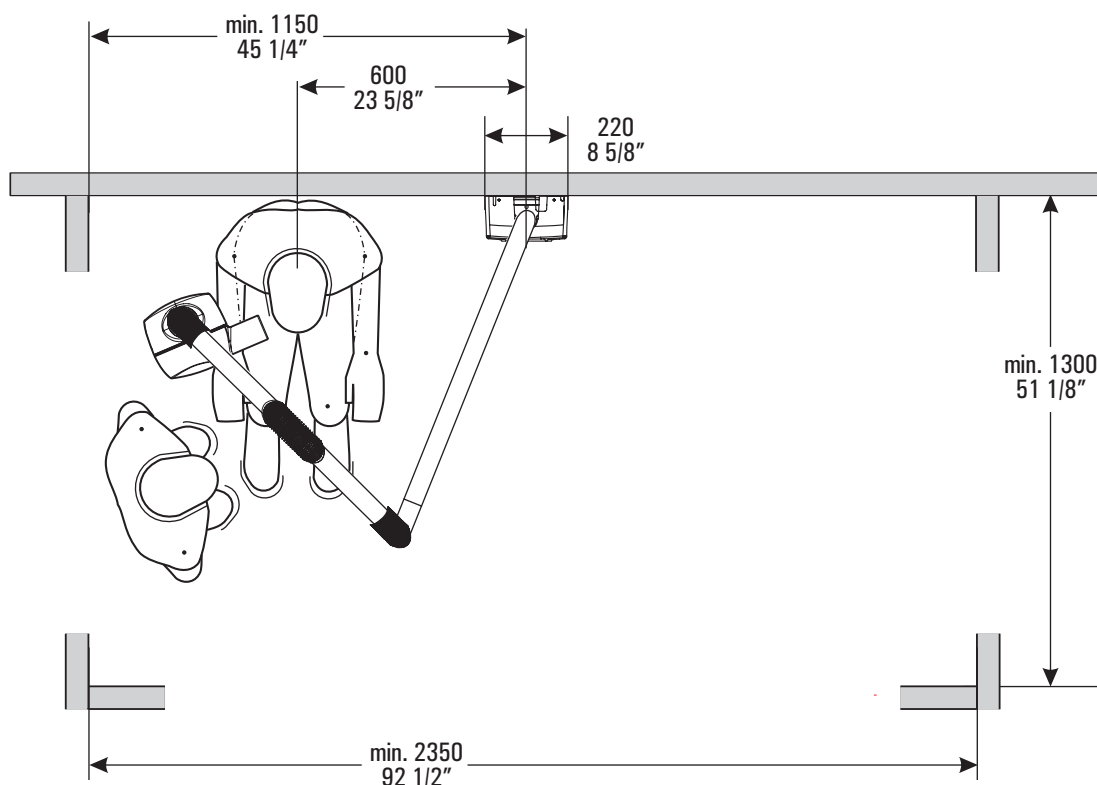
A	Recommended installation height: 1110 mm (43 3/4")
T	X-ray tube assembly with standard tube, 200 mm (8") SSD

Dimensions for 950 mm (37 3/8") support arm

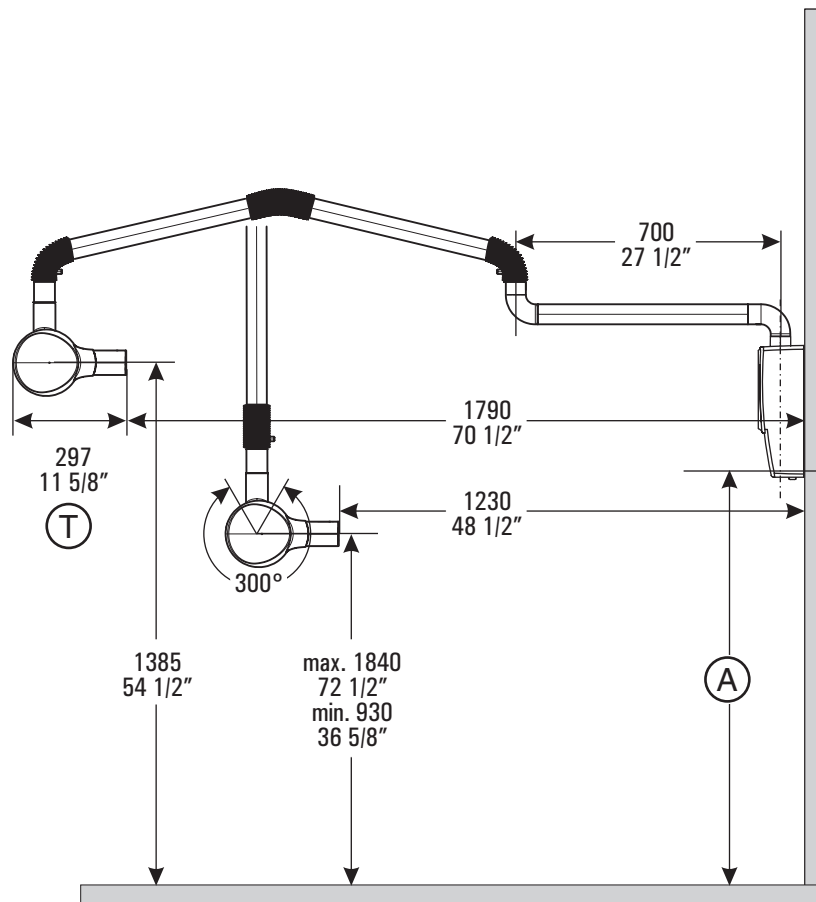


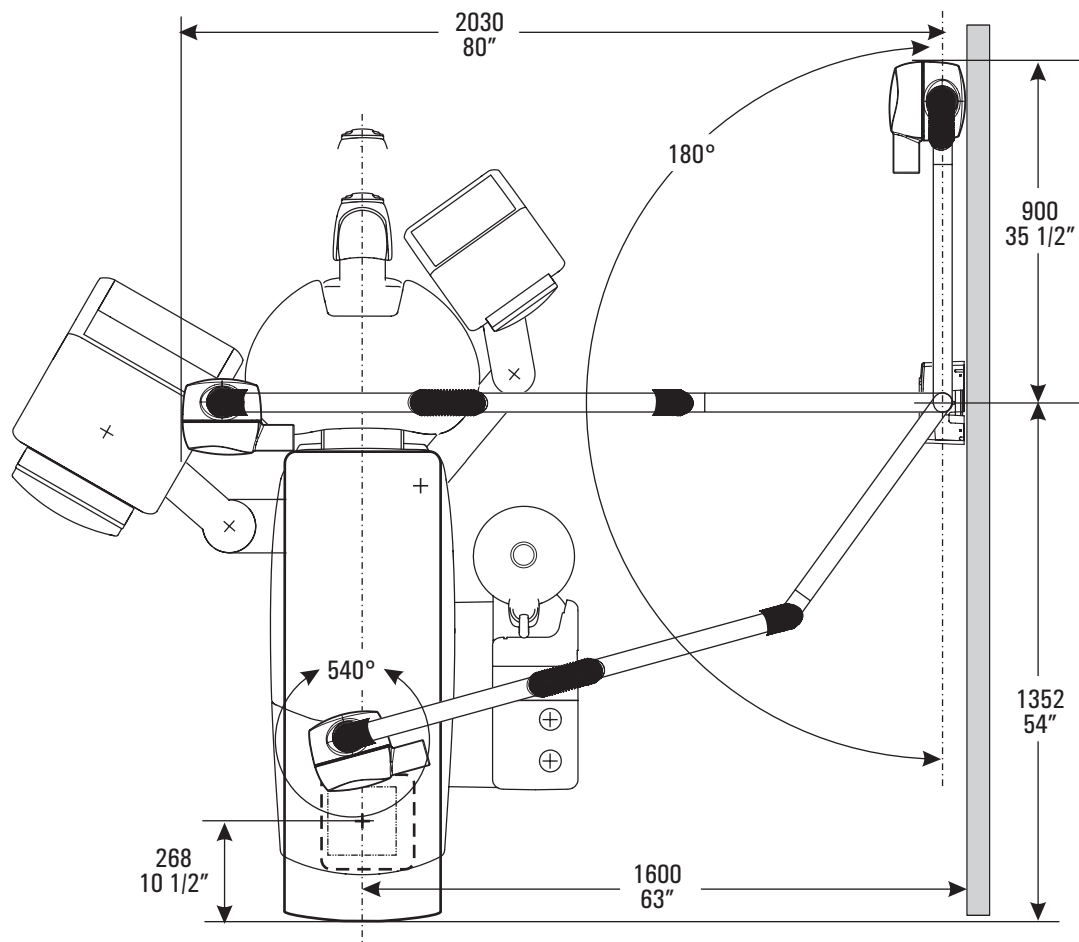


**Minimum dimensions for X-ray rooms with 950 mm (37 3/8") support arm**

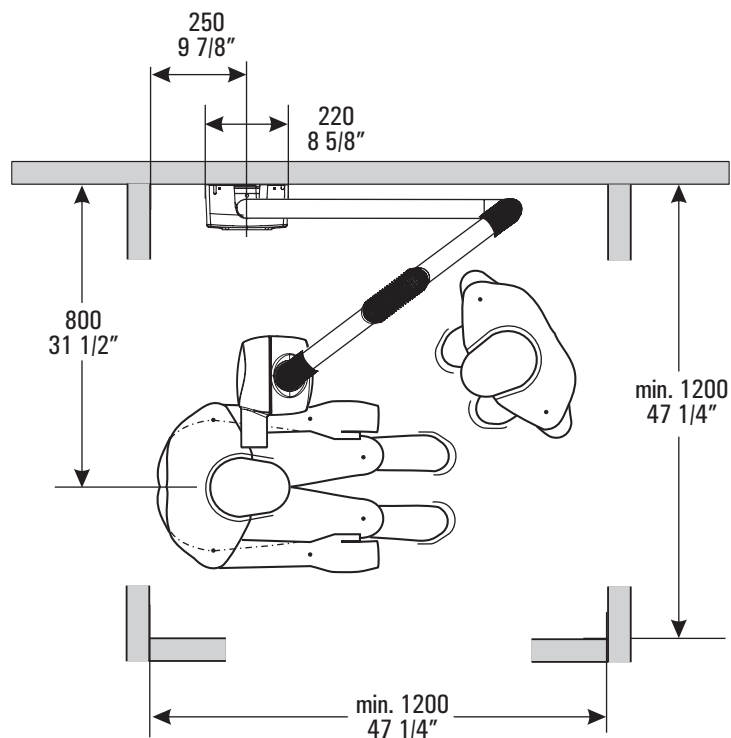
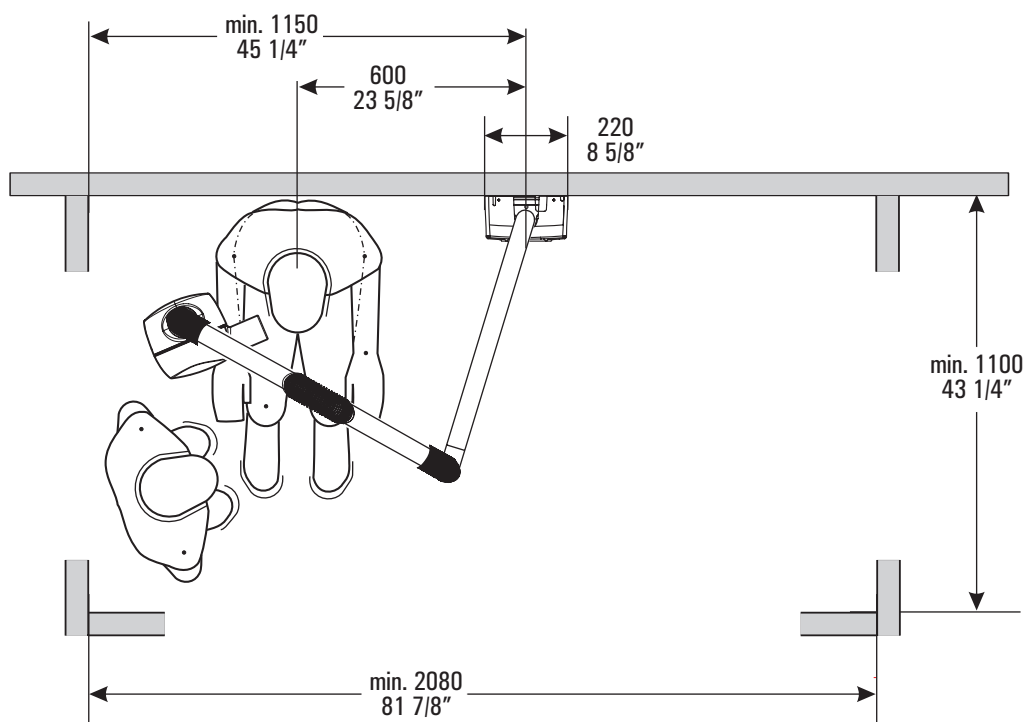


### Dimensions for 700 mm (27 1/2") support arm

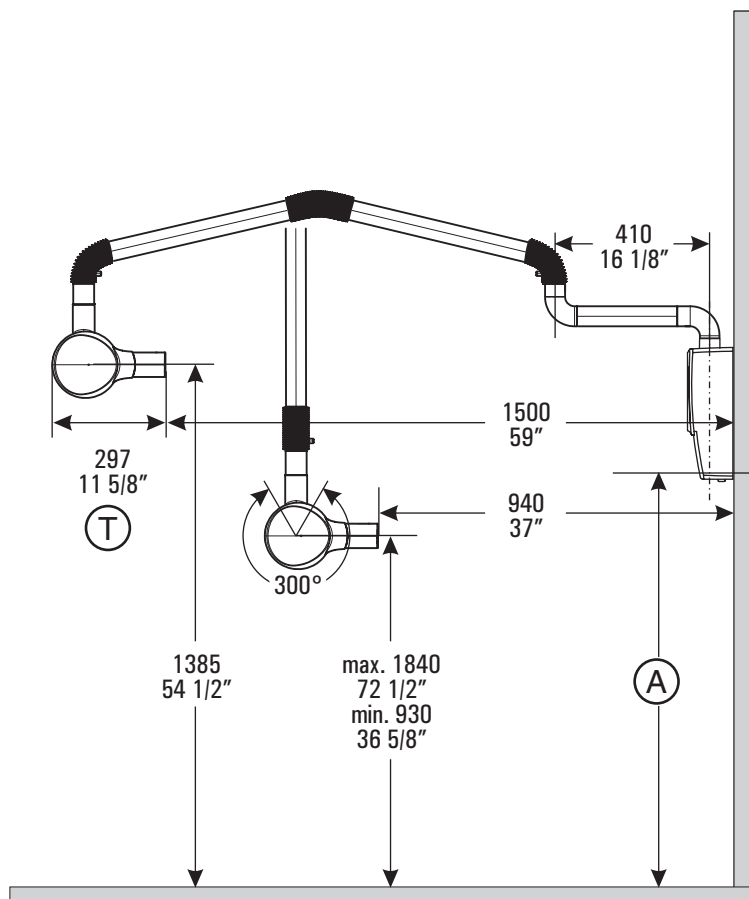




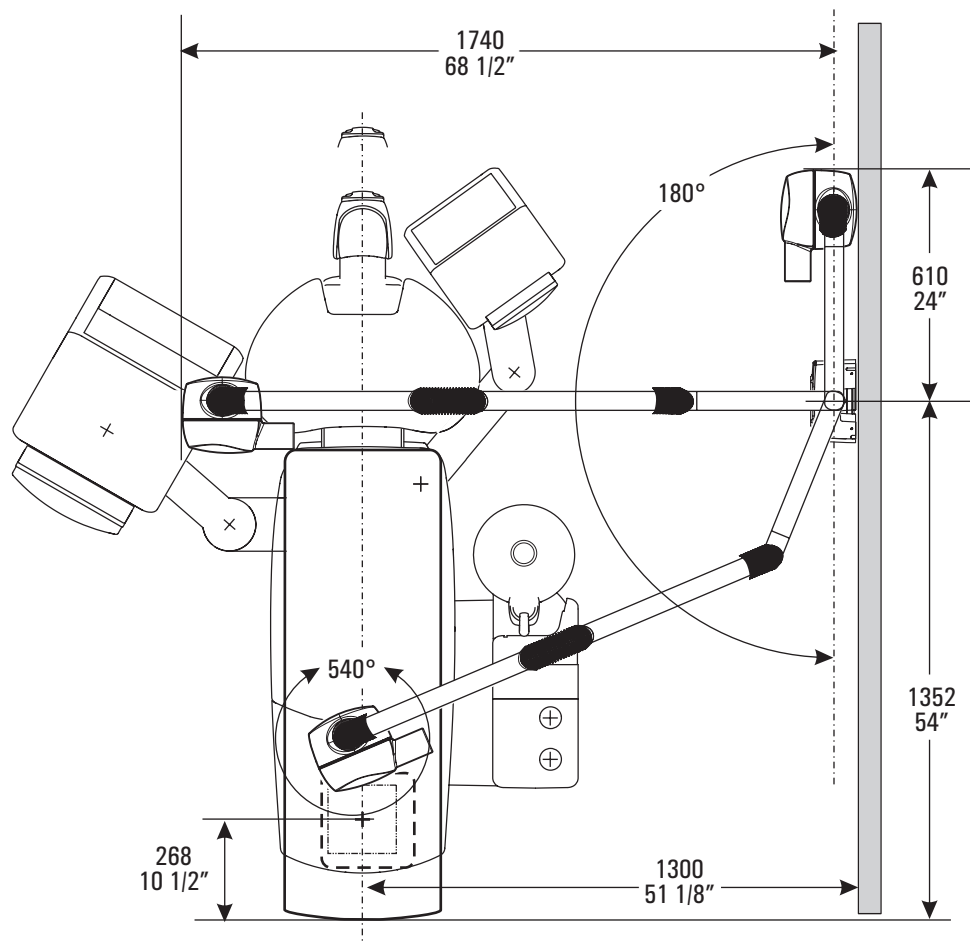
**Minimum dimensions for X-ray rooms with 700 mm (27 1/2") support arm**



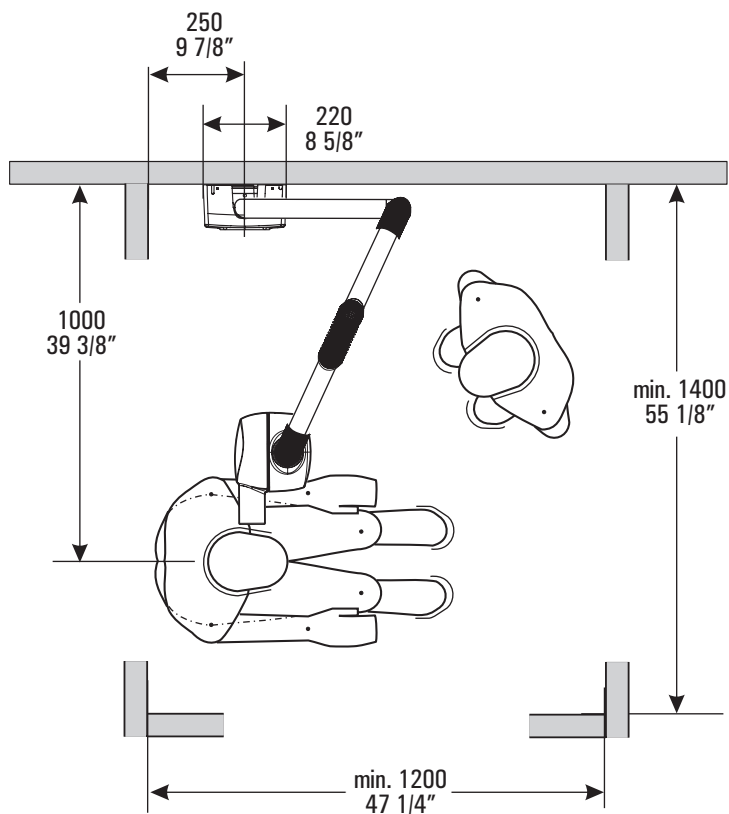
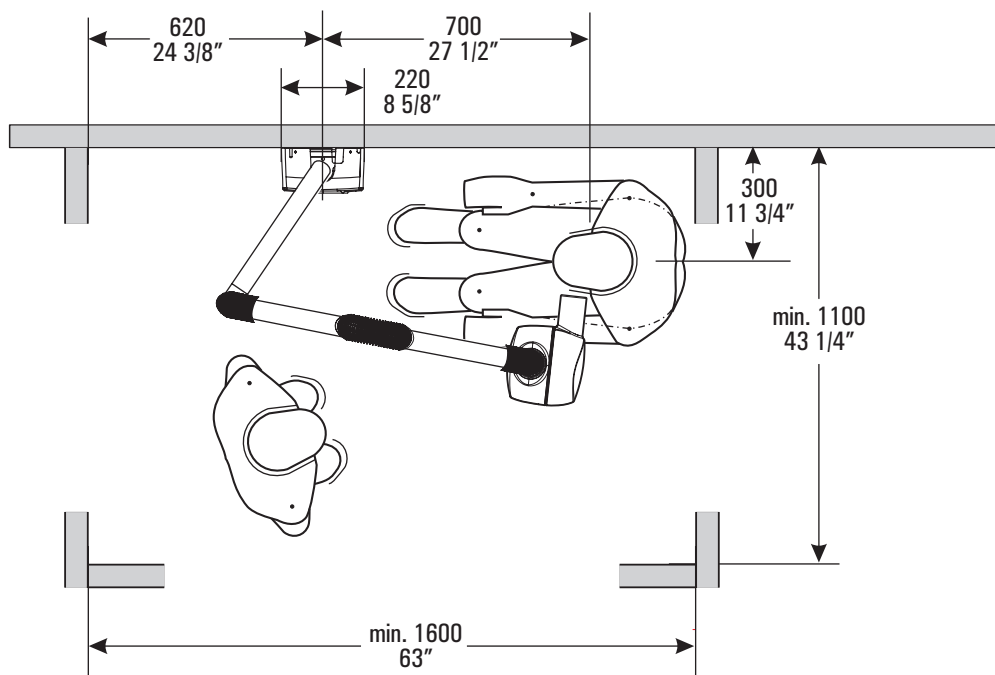
### Dimensions for 410 mm (16 1/8") support arm







**Minimum dimensions for X-ray rooms with 410 mm (16 1/8") support arm**



## 2.2 Technical data

<b>Dimensions of the packaging</b>	
HELIODENT <sup>PLUS</sup>	87 cm x 91 cm x 29 cm 34 1/4" x 35 7/8" x 11 1/2"
<b>Weight</b>	incl. / without packaging
HELIODENT <sup>PLUS</sup>	31 kg / 24 kg 68.34 lb / 53 lb
<b>Power supply</b>	
Line voltage	120 V, 200 V - 240 V, 50 / 60 Hz
Line voltage variation	± 10 %
Internal line resistance	At 120 V: 0.3 Ω for 200 V - 240 V: 0.8 Ω
Rated current	At 120 V: 10 A for 200 V - 240 V: 6 A - 5 A
Fuse	16 A slow-blow
Power consumption	≤ 1.2 kW

## 3 Electromagnetic compatibility

### NOTICE

HELIODENT<sup>Plus</sup> complies with the requirements for electromagnetic compatibility (EMC) according to IEC 60601-1-2:2001.

HELIODENT<sup>Plus</sup> is referred to in the following as "UNIT". Observance of the following information is necessary to ensure safe operation regarding EMC aspects.

### 3.1 Accessories

Designation of the interface cables	Order No.
LIYCY 2x0.25mm <sup>2</sup> (AWG 24) remote cable L9 for remote release, 10m	62 42 064
LIYYC 8x0.22mm <sup>2</sup> (AWG 24) remote cable L6 for Remote Timer, 10m	62 42 056
3x1.5mm <sup>2</sup> NYM	Commercially available

- The UNIT may be operated only with accessories and spare parts approved by Sirona. Unapproved accessories and spare parts may lead to an increased emission of or a reduced immunity to interference.
- The UNIT should not be operated immediately adjacent to other devices. If this proves to be unavoidable, the UNIT should be monitored to ensure that it is used properly.

### 3.2 Electromagnetic emission

The **UNIT** is intended for operation in the electromagnetic environment specified below.

The customer or user of the **UNIT** should make sure that it is used in such an environment.


Emission measurement	Conformity	Electromagnetic environment – guidelines
RF emissions according to <b>CISPR 11</b>	Group 1	The <b>UNIT</b> uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.  The <b>UNIT</b> is intended for use in all facilities, including residential areas and in any facilities connected directly to a public power supply providing electricity to buildings used for residential purposes.
RF emissions according to <b>CISPR 11</b>	Class B	
Harmonics according to <b>IEC 61000-3-2</b>	Class A	
Voltage fluctuations/flicker according to <b>IEC 61000-3-3</b>	Complies	

### 3.3 Interference immunity

The **UNIT** is intended for operation in the electromagnetic environment specified below.

The customer or user of the **UNIT** should make sure that it is used in such an environment.

Interference immunity tests	IEC 60601-1-2 test level	Compliance level	Electromagnetic environment – guidelines
Electrostatic discharge (ESD) according to IEC 61000-4-2	± 6 kV contact discharge ± 8 kV air discharge	± 6 kV contact discharge ± 8 kV air discharge	Floors should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst according to IEC 61000-4-4	± 1 kV for input and output lines ± 2 kV for power supply lines	± 1 kV for input and output lines ± 2 kV for power supply lines	The quality of the line power supply should be that of a typical commercial or hospital environment.
Surge voltages according to IEC 61000-4-5	± 1 kV differential mode ± 2 kV common mode voltage	± 1 kV differential mode ± 2 kV common mode voltage	The quality of the line power supply should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and variations of the power supply according to IEC 61000-4-11	<5% $U_T$ for ½ period (>95% dip of $U_T$ ) 40% $U_T$ for 5 periods (60% dip of $U_T$ ) 70 % $U_T$ for 25 periods (30% dip of $U_T$ ) <5% $U_T$ for 5sec. (>95% dip of $U_T$ )	<5% $U_T$ for ½ period (>95% dip of $U_T$ ) 40% $U_T$ for 5 periods (60% dip of $U_T$ ) 70 % $U_T$ for 25 periods (30% dip of $U_T$ ) <5% $U_T$ for 5sec. (>95% dip of $U_T$ )	The quality of the line power supply should be that of a typical commercial or hospital environment.  If the user of the <b>UNIT</b> requires it to continue functioning following interruptions of the power supply, it is recommended to have the <b>UNIT</b> powered by an uninterruptible power supply or a battery.
Magnetic field of power frequencies (50/60 Hz) according to IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
Remarks: $U_T$ is the AC supply voltage prior to application of the test level.			
			Portable and mobile radio equipment must not be used within the recommended working clearance from the <b>UNIT</b> and its cables, which is calculated based on the equation suitable for the relevant transmission frequency.  Recommended working clearance:
Conducted RF interference IEC 61000-4-6	3 $V_{\text{eff}}$ 150 kHz to 80 MHz <sup>1</sup>	3 $V_{\text{eff}}$	$d = [1.2] \sqrt{P}$

Interference immunity tests	IEC 60601-1-2 test level	Compliance level	Electromagnetic environment – guidelines
Radiated RF interference <b>IEC 61000-4-3</b>	3 V/m 80 MHz to 800 MHz <sup>1</sup>  3 V/m 800 MHz to 2.5 GHz <sup>1</sup>	3 V <sub>eff</sub>  3 V <sub>eff</sub>	$d = [1.2] \sqrt{P}$ at 80 MHz to 800 MHz  $d = [2.3] \sqrt{P}$ at 800 MHz to 2.5 GHz  where $P$ is the nominal transmitter output in watts (W) specified by the transmitter manufacturer and $d$ is the recommended working clearance in meters (m).  Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey <sup>2</sup> should be less than the compliance level <sup>3</sup> in each frequency range.  Interference is possible in the vicinity of equipment bearing the following  graphic symbol.

- 1 The higher frequency range applies at 80 MHz and 800 MHz.
- 2 Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast, cannot be predicted theoretically with accuracy. An investigation of the location is recommended to determine the electromagnetic environment resulting from stationary RF transmitters. If the measured field strength in the location in which the **UNIT** is used exceeds the applicable RF compliance level specified above, the **UNIT** should be observed to verify normal operation. If unusual performance characteristics are observed, it may be necessary to take additional measures such as reorientation or repositioning of the **UNIT**.
- 3 Over the frequency range 150kHz to 80MHz, field strengths should be less than 3V/m.

## 3.4 Working clearances

### Recommended working clearances between portable and mobile RF communication devices and the UNIT

The **UNIT** is intended for operation in an electromagnetic environment, where radiated RF interference is checked. The customer or the user of the **UNIT** can help prevent electromagnetic interference by duly complying the minimum distances between portable and/or mobile RF communication devices (transmitters) and the **UNIT**. These values may vary according to the output power of the relevant communication device as specified below.

Rated maximum output power of transmitter [W]	Working clearance according to transmission frequency [m]		
	150kHz to 80 MHz	80 MHz to 800 MHz	800 MHz to 2.5 GHz
	$d = [1.2] \sqrt{P}$	$d = [1.2] \sqrt{P}$	$d = [2.3] \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

For transmitters whose maximum nominal output is not specified in the above table, the recommended working clearance  $d$  in meters (m) can be determined using the equation in the corresponding column, where  $P$  is the maximum nominal output of the transmitter in watts (W) specified by the transmitter manufacturer.

#### Remark 1

The higher frequency range applies at 80 MHz and 800 MHz.

#### Remark 2

These guidelines may not be applicable in all cases. The propagation of electromagnetic waves is influenced by their absorption and reflection by buildings, objects and persons.

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We reserve the right to make any alterations which may be required due to technical improvements.

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