HELIODENT<sup>PLUS</sup>

Installation Requirements
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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
  - Remote control release key S9

Installation option 3
Release in the treatment room with Remote Timer
- Release
  - Manual release S3
  - 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
  - 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
  - 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
  - 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
  - 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

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

Sirona Dental Systems GmbH

Installation Requirements HELIODENTPLUS

1 Prior to installation

On-site installation

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.

<table>
<thead>
<tr>
<th>K</th>
<th>Tensile force per screw</th>
</tr>
</thead>
<tbody>
<tr>
<td>3600N if L ≤ 700mm (27 1/2&quot;)</td>
<td></td>
</tr>
<tr>
<td>4200N if L ≤ 950mm (37 3/8&quot;)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>L</th>
<th>Length of support arm</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>M</th>
<th>Mounting plate (supplied)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>N</th>
<th>Anchor plate</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>O</th>
<th>Threaded bolt M8</th>
</tr>
</thead>
</table>

- 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 HELIODENTPLUS.

- 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 1, Gendex 765DC 1) coincide with the dimensions of the drill holes of the Heliodent PLUS. 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 ø int. min. 12mm (1/2’’); requires an excess length of at least 0.25 m (10’’) at both ends!
- Power cable 3x1.5 mm² (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.
2.1 Dimensions

<table>
<thead>
<tr>
<th></th>
<th>Recommended installation height: 1110 mm (43 3/4&quot;)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>X-ray tube assembly with standard tube, 200 mm (8&quot;) SSD</td>
</tr>
</tbody>
</table>

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

Installation Requirements HELIODENT®PLUS

Dimensions

- 2280 mm (89 3/4"
- 1150 mm (45 1/4"
- 1352 mm (54"
- 1850 mm (72 7/8"
- 268 mm (10 1/2"
- 540°
- 180°
Minimum dimensions for X-ray rooms with 950 mm (37 3/8") support arm

- Min. 1150 mm (45 1/4")
- Min. 2350 mm (92 1/2")
- Min. 1300 mm (51 1/8"")

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

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

- Min. 1150 mm (45 1/4")
- Min. 2350 mm (92 1/2")
- Min. 1300 mm (51 1/8"")
Dimensions for 700 mm (27 1/2") support arm

- Max. 1840 mm (72 1/2"), min. 930 mm (36 5/8"")
- 1385 mm (54 1/2")
- 1790 mm (70 1/2")
- 1230 mm (48 1/2")
- 297 mm (11 5/8")
Dimensions Installation Requirements HELIODENT® PLUS

2 Dimensions, technical data

Dimensions Sirona Dental Systems GmbH

Installation Requirements HELIODENT® PLUS

62 15 037 D3507

D3507.021.01.02 09.2009

268 10 1/2"

1600 63"

900 35 1/2"

1352 54"

180°

540°

540°

180°

2030 80°
Minimum dimensions for X-ray rooms with 700 mm (27 1/2") support arm

- Min. 1100 45 1/4"
- Min. 1150 45 1/4"
- Min. 2080 81 7/8"
- Min. 1200 47 1/4"
- 250 9 7/8"
- 220 8 5/8"
- 800 31 1/2"
- 600 23 5/8"
Dimensions for 410 mm (16 1/8") support arm

- max. 1840 72 1/2"
- min. 930 36 5/8"
- 1500 59"
- 410 16 1/8"
- 940 37"
- 297 11 5/8"
- 1385 54 1/2"
Dimensions, technical data
Installation Requirements HELIODENT®PLUS

Dimensions

- 1740 (68 1/2"
- 1352 (54"
- 1300 (51 1/8"
- 268 (10 1/2"
- 1300 (51 1/8"
- 610 (24"
- 540°
- 180°
Minimum dimensions for X-ray rooms with 410 mm (16 1/8") support arm

- 620 mm minimum width
  - 24 3/8"

- 700 mm minimum height
  - 27 1/2"
- 220 mm minimum horizontal distance
  - 8 5/8"

- 300 mm minimum vertical distance
  - 11 3/4"

- Min. 1100 mm or 43 1/4"

- Min. 1600 mm or 63"

- 250 mm minimum vertical distance
  - 9 7/8"
- 1000 mm minimum vertical distance
  - 39 3/8"

- Min. 1400 mm or 55 1/8"

- Min. 1200 mm or 47 1/4"
2.2 Technical data

<table>
<thead>
<tr>
<th>Dimensions of the packaging</th>
<th>87 cm x 91 cm x 29 cm</th>
</tr>
</thead>
<tbody>
<tr>
<td>HELIODENT&lt;sup&gt;PLUS&lt;/sup&gt;</td>
<td>34 1/4&quot; x 35 7/8&quot; x 11 1/2&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weight</th>
<th>incl. / without packaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>HELIODENT&lt;sup&gt;PLUS&lt;/sup&gt;</td>
<td>31 kg / 24 kg</td>
</tr>
<tr>
<td></td>
<td>68.34 lb / 53 lb</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power supply</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Line voltage</td>
<td>120 V, 200 V - 240 V, 50 / 60 Hz</td>
</tr>
<tr>
<td>Line voltage variation</td>
<td>± 10 %</td>
</tr>
<tr>
<td>Internal line resistance</td>
<td>At 120 V: 0.3 Ω</td>
</tr>
<tr>
<td></td>
<td>for 200 V - 240 V: 0.8 Ω</td>
</tr>
<tr>
<td>Rated current</td>
<td>At 120 V: 10 A</td>
</tr>
<tr>
<td></td>
<td>for 200 V - 240 V: 6 A - 5 A</td>
</tr>
<tr>
<td>Fuse</td>
<td>16 A slow-blow</td>
</tr>
<tr>
<td>Power consumption</td>
<td>≤ 1.2 kW</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Designation of the interface cables</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIYCY 2x0.25mm² (AWG 24) remote cable L9 for remote release, 10m</td>
<td>62 42 064</td>
</tr>
<tr>
<td>LIYYC 8x0.22mm² (AWG 24) remote cable L6 for Remote Timer, 10m</td>
<td>62 42 056</td>
</tr>
<tr>
<td>3x1.5mm² NYM</td>
<td>Commercially available</td>
</tr>
</tbody>
</table>

- 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.

<table>
<thead>
<tr>
<th>Emission measurement</th>
<th>Conformity</th>
<th>Electromagnetic environment – guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF emissions according to CISPR 11</td>
<td>Group 1</td>
<td>The UNIT 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.</td>
</tr>
<tr>
<td>RF emissions according to CISPR 11</td>
<td>Class B</td>
<td>The UNIT 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.</td>
</tr>
<tr>
<td>Harmonics according to IEC 61000-3-2</td>
<td>Class A</td>
<td></td>
</tr>
<tr>
<td>Voltage fluctuations/flicker according to IEC 61000-3-3</td>
<td>Complies</td>
<td></td>
</tr>
</tbody>
</table>
### 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.

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

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\(^1\) For frequencies above 80 MHz, the effective value should be calculated.
### Interference immunity tests

<table>
<thead>
<tr>
<th>IEC 60601-1-2 test level</th>
<th>Compliance level</th>
<th>Electromagnetic environment – guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiated RF interference</td>
<td>3 V/m 80 MHz to 800 MHz&lt;sup&gt;1&lt;/sup&gt;</td>
<td>$d = [1.2] \sqrt{P}$ at 80 MHz to 800 MHz</td>
</tr>
<tr>
<td>IEC 61000-4-3</td>
<td>3 V&lt;sub&gt;eff&lt;/sub&gt;</td>
<td>$d = [2.3] \sqrt{P}$ at 800 MHz to 2.5 GHz</td>
</tr>
<tr>
<td>3 V/m 800 MHz to 2.5 GHz&lt;sup&gt;1&lt;/sup&gt;</td>
<td>3 V&lt;sub&gt;eff&lt;/sub&gt;</td>
<td>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).</td>
</tr>
</tbody>
</table>

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.

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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 80 MHz, field strengths should be less than 3 V/m.
3.4 Working clearances

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.

<table>
<thead>
<tr>
<th>Rated maximum output power of transmitter [W]</th>
<th>Working clearance according to transmission frequency [m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>150kHz to 80MHz</td>
<td>80 MHz to 800 MHz</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>--------------------------------------------------------</td>
</tr>
<tr>
<td>$d = [1.2] \sqrt{P}$</td>
<td>$d = [1.2] \sqrt{P}$</td>
</tr>
<tr>
<td>0.01</td>
<td>0.12</td>
</tr>
<tr>
<td>0.1</td>
<td>0.38</td>
</tr>
<tr>
<td>1</td>
<td>1.2</td>
</tr>
<tr>
<td>10</td>
<td>3.8</td>
</tr>
<tr>
<td>100</td>
<td>12</td>
</tr>
</tbody>
</table>

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