A. System Components

Tempe™ Sensor

1. Crystal Compartment
   Houses quartz crystal

2. Flange
   Acts as air-tight barrier sealing sensor head in chamber

3. Heater Control Connector
   The 4-pin LEMO connector provides heater power and temperature measurement

4. SMA Connector
   Unites crystal and Eon™ for crystal frequency measurement

5. Cooling Tubes
   For cooling sensor head using air or water

6. LED Indicators
   Connects to 24 VDC power input

7. RS232 Connector
   USB-to-RS232 cable)

Eon™ Controller

1. Type K TC Inputs
   Thermocouples used to monitor temperature.

2. Heater Control Connector
   Provides power to Tempe™ heater.

3. 6-5 VDC & Relay Output
   Connects the 6-5 VDC output for the deposition source, the 24 VDC Mirage™, and the relay control.

4. BNC Sensor Inputs
   Connects to sensor head via external oscillator.

5. Power Input
   Connects 24 VDC power input

6. LED Indicators
   Display status of Eon™.

7. RS232 Connector
   Connects Eon™ to your PC. (Always use the provided USB-to-RS232 cable)

Mirage™ Air-Cooling System

1. Exhaust Outlet (¼ NPT)
2. Exhaust Muffler
3. Air Input
   - Partially Compressed (50-75% of 8 bar max)
   - Balanced (20” of water max)
   - 100% oil free
4. Solenoid Power In
   Connects Mirage™ to your PC.
5. Cooling Output
   Connects 0-5 VDC & Relay Output

C. Adding New Crystal

1. Obtain a copper Conflat™ gasket and place onto sensor head.
2. Fit gasket into circular groove on Conflat™ flange.
3. Hold copper gasket in place while inserting sensor head into chamber feedthrough.
   Apply bolts and plate-nuts. Tightening bolts compresses copper gasket between a sharp edge and a tapered groove, creating a near-perfect seal.

D. Chamber Installation

1. Turn cap COUNTER CLOCKWISE to loosen and remove.
2. Flip cap over to access crystal retainer ring. Loosen ring by turning COUNTER CLOCKWISE.
3. Remove retainer ring to access mock crystal using supplied tool.
4. Remove mock crystal from sensor head cap (use a non-metallic tool).

B. Removing Mock Crystal

1. Turn cap COUNTER CLOCKWISE to loosen and remove.
2. Flip cap over to access crystal retainer ring. Loosen ring by turning COUNTER CLOCKWISE.
3. Remove retainer ring to access mock crystal using supplied tool.
4. Remove mock crystal from sensor head cap (use a non-metallic tool).

ADVISORY

INSPECT PRODUCT CONDITION ON ARRIVAL
Please examine your new Tempe™ sensor for any signs of physical damage that may have occurred during shipping. Make sure that the tamper-evident labels are intact. Before shipping, your Tempe™ was tested by Colnatec to meet the highest quality standards. It is important that you take a few minutes to inspect the product to ensure that your equipment was not damaged or otherwise tampered with during transit.

WARNING

- Microfractures may develop in copper gasket if flange bolts are over-tightened. Seal may become weakened, resulting in chamber leakage.
- Hand-tighten flange bolts before using wrench. When using wrench, alternate among bolts using a sequential torque pattern.

Important:
- Seal may become weakened, resulting in chamber leakage.
- Use nonmetallic tweezers to adjust crystal position until crystal rests snugly in the crystal seat.
- Please examine your new Tempe™ sensor for any signs of physical damage that may have occurred during shipping. Make sure that the tamper-evident labels are intact. Before shipping, your Tempe™ was tested by Colnatec to meet the highest quality standards. It is important that you take a few minutes to inspect the product to ensure that your equipment was not damaged or otherwise tampered with during transit.

Note: Mock crystal acts as placeholder to protect sensor components during shipping.

C. Adding New Crystal

1. Obtain a copper Conflat™ gasket and place onto sensor head.
2. Fit gasket into circular groove on Conflat™ flange.
3. Hold copper gasket in place while inserting sensor head into chamber feedthrough.
   Apply bolts and plate-nuts. Tightening bolts compresses copper gasket between a sharp edge and a tapered groove, creating a near-perfect seal.
E. Tempe™ Connections

1. Connect 6’ SMI-to-BNC Adapter Cable to Tempe™
   Plug cable in place using cable shaft and resistance is felt.
   (Twisting cable shaft past point of resistance may damage cable).

2. Connect Heater Control Cable to Tempe™
   The 4-pin LEMO connector provides heater power and control.
   To install, push until it clicks in place. Ensure that the four pins inside the connector
   align properly with the pin holes inside the female connector inside Tempe™.

3. Connect 6’ SMI-to-BNC Adapter Cable to Oscillator
   Attach BNC cable from Tempe™ to connector on oscillator marked “CRYSTAL.”
   Use the cables that shipped with your system only. Ensure that the distance between the crystal
   compartment and oscillator does not exceed 36 inches.

4. Attach Mirage™ Air-coil to Tempe™ Cooling Tube
   Slide the “bush-to-connect” air coil fitting onto one of the 3/16” cooling tubes projecting from
   the flange of the Tempe™. Featuring an interior baffle, the air coil connector will snap
   securely in place.

5. Attach Mirage™ Air-coil to Tempe™ Cooling Tube
   Slide the “bush-to-connect” air coil fitting onto one of the 3/16” cooling tubes projecting from
   the flange of the Tempe™. Featuring an interior baffle, the air coil connector will snap
   securely in place.

WARNING

Misaligned coupling of LEMO electrical connectors can result in severe damage to Tempe™.

Length between the crystal and oscillator SHOULD NOT exceed 36 inches (914 mm).

F. Eon™ Connections

1. Connect 10’ BNC-to-BNC Cable to Eon™
   Connect 10’ BNC-to-BNC cable to BNC connector on front panel of Eon™.

2. Connect Other End of 10’ BNC-to-BNC to Oscillator
   Connect 10’ BNC cable from Eon™ to BNC connector on oscillator marked “CRYSTAL.”

3. Plug TC Adapter into K Type Input on Eon™
   Plug thermocouple extension cable into K type thermocouple socket
   with the wide blade (-) corresponding to the upper slot and narrow blade (+)
   fitting into lower slot.

4. Connect TC Adapter and TC Extension Cable
   Plug sensor thermocouple cable into thermocouple extension cable.
   Wide blade (-) fits into wide slot on female thermocouple socket.
   Narrow blade (+) fits into narrow socket.

5. Connect Heater Control Cable (DB-9 Connector) to Eon™
   Plug DB9 connector into the 15-pin heater control connector on front panel of Eon™.

6. Connect Mirage™ Cable to Eon™
   Connect 9-pin female-side of Mirage™ cable to the relay output on back panel
   of Eon™.

WARNING

Do Not Connect DB9 Control Cable to Heater Port While Heater Port is Active
   Plugging DB9 connector into the Eon™ controller while heater port is active can damage the heater.

Ensure Proper Connection of Eon™ Controller and Tempe™ to Oscillator
   System will function incorrectly if oscillator is oriented improperly between Eon™ and Tempe™.

G. Mirage™ Connections

1. Attach Air Cool to Mirrage™
   Slide the 3/16” air coil fitting onto cooling outlet fitting on
   rear of the Mirrage™. The cooling system provides a
   maximum output of 28˚C (50˚F) below the compressed
   air source.

2. Connect Compressed Air Input to Mirrage™
   Connect a filtered, oil-free compressed air source to
   air input fitting on Mirrage™ (Air fittings may vary by
   country but require a 1/4 NPT female connection).

3. Eon™ Supplies Power to Mirrage™ through Power
   Module
   The 5-pin asynchronous power input module connects to Mirrage™,
   providing power to it. Tighten integrated screw after mating to device.

4. Relay Cable from Monitor/Controller to Air-Cooling Device
   Port of the DB-9 connector cable bundle that plugs into the I/O port of the monitor/ controller and relay
   provides a 2-wire interface for switching.

H. Connecting Eon™ to PC

1. Install Software onto PC
   Insert Eon™ software CD into disc drive. Follow prompts to install software
   onto PC.

2. Connect RS-232 into Eon™
   Plug RS-232 connector into male serial port on rear panel.

3. Connect RS-232 Cable and USB Adapter
   Plug the other end of the RS-232 cable into the
   USB-to-RS-232 adapter.

4. Connect USB-to-RS-232 Adapter into PC
   Plug USB-end of the USB-to-RS-232 adapter into PC.

WARNING

To avoid erratic noise levels in oscillation reading, length between the Tempe™ crystal
compartment and the oscillator SHOULD NOT exceed 36 inches (914 mm).

ADVISORY

If drivers are already installed, simply update the drivers when installing software.

Ensure that the software has been fully installed before updating drivers.

Only use the provided cables.

Finally reboot the computer after the software installation to prevent issues with drivers.

To avoid erratic noise levels in oscillation reading, length between the Tempe™ crystal
compartment and the oscillator SHOULD NOT exceed 36 inches (914 mm).

If the warranty label on Eon™ has been tampered with, “Void” will appear where the warranty label was originally placed. If this is visible at the
time of arrival, it is important that you contact Colnatec immediately after receiving the product.

WARRANTY LABEL

If the warranty label on Eon™ has been tampered with, “void” will appear where the warranty label was originally placed. If this is visible at the
time of arrival, it is important that you contact Colnatec immediately after receiving the product.

If the warranty label on Eon™ has been tampered with, “Void” will appear where the warranty label was originally placed. If this is visible at the
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