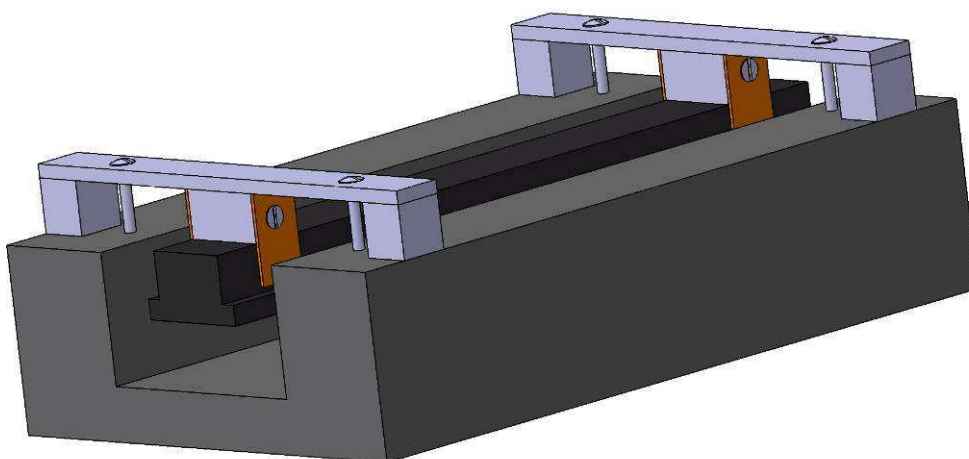


# PUR Sensor™ Installation with PAGEL V2/40

## Installation Manual for Concrete Roads



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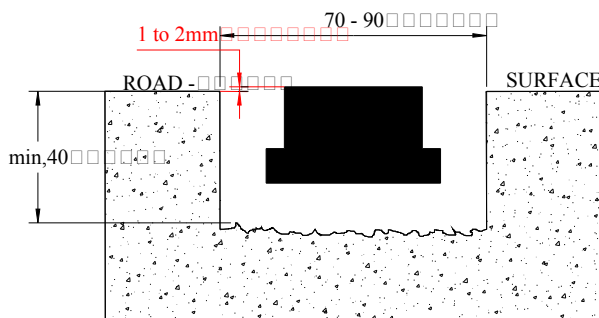
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1. Assemble all tools and materials for the installation. Make sure that all safety equipment is available and that all operators are properly trained in the use of any power tool.
2. Mark the location of the PUR sensor. Mark a cut being a minimum of **70 mm** wide and at **least 50 mm longer** than the length of the sensor. At the same time mark the location for the conduit.
3. Cut the opening at least **50 mm** deep over the entire area. Exact procedures for this will be determined locally. Make the necessary cuts for the conduit. Use a jackhammer to remove the concrete to **at least 40 mm at all points deep** (see sketch slot dimensions). An electric jackhammer or a small pneumatic one will probably be better than a large pneumatic hammer.  
**The finished opening must be at least 70 mm wide and 40 mm deep over the whole length and at least 50 mm longer than the length of the PUR sensor (see sketch slot dimensions).**



4. Clean out all rubble and vacuum all dust.
5. **Make sure that the concrete surface (slot walls and bottom) is wet and completely water-saturated during all times until the end of the installation process! Make also sure that there are no water puddles in the slot (see User Manual Pagel V2/40).**

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6. Position the PUR sensor beside the slot.
7. Clip the hanger bars on the sensor so that it can be positioned over the opening. Clip one hanger to the beginning and one to end of the sensor strip and at least one hanger bar every 25-30 cm. The hanger bars ensure the right leveling of the PUR sensor to the road surface. The hanger bars have to be screwed or loaded as to avoid a floating up of the strips because PUR sensors are much lighter than the mortar. Make sure that all hanger bars are correctly clipped to the sensor. See image on page 1.
8. Position the PUR sensor into the slot. Be sure to achieve an even and nearly exact height for the whole slot. Fix the hanger bars to the road with screws or suited weights.
9. Run the conduit to the proper location. CAREFULLY pull the passive cables through the conduit. Once pulled in, check again if light is going through the feeder cables and sensor. Remove both end caps of the connectors and point one connector at the sun. You should see a light at the other connector's end.
10. Tighten all spaces leading outwardly.
11. Mix the necessary amount of special mortar "Pagel V2/40". Use accurately 3.25 liter of water for one bag cement (25 kg). Fill about 90% of the necessary amount of water in a bowl that is wide enough and add the complete sack of mortar. Mix for about 3 minutes with a heavy duty, slow speed electric drill and mixing paddle (see User Manual Pagel V2/40). After this add the rest of the water and mix for a further 2 minutes.



12. Fill up the slot with fluid mortar. Pour only into one opening between PUR sensor and the road. The mortar needs to run below the strip and fill up the space under it completely to avoid air encapsulations. This would cause sensitivity problems of the PUR sensor. Then fill up all spaces up to street surface.



13. Wait until the mortar is hard enough to finish it with a trowel. Do not scrape off all of the mortar but just as much so that there is a good bonding between road, cement and PUR sensor.



14. Remove the hanger bars and clean the mortar smoothly off the sensor with a trowel. Do not over-trowel.

15. Protect the mortar from direct solar radiation, keep it wet and wait at least 2 hours until the mortar is hardened. After that you can open the lane.

16. If there is direct solar radiation, wind or high temperatures, make sure that the mortar is constantly wet for at least 3 to 5 days. Otherwise, the cement will form cracks.



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## Materials & Equipment List

- Hanger bars (by Sensor Line GmbH)
- Necessary amount of mortar Pagel V2/40  
Quantity required is about 6 kg/m PUR Sensor.
- Screws and dowel, or weights (for fixing the hanger bars onto the pavement)
- Hammer drill with drill bits
- Electric screwdriver
- Road saw with narrow blade
- Electric jackhammer or small pneumatic jackhammer
- Heavy duty slow speed electric drill
- Mixing paddle
- At least 3 buckets (for mixing mortar, water for mortar, additional water for smoothing mortar)
- Set of scales for exact weighing of V2/40 and water
- Spatulas und smoothing trowels
  
- Conduit inner diameter at least 20 mm

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