In sync with Microsoft automotive

Pomona Electronics helps Microsoft deliver a new level of in-car experience

Microsoft and automotive are words not normally associated with each other, yet Microsoft has been developing technologies for the automotive industry since 1995. The Microsoft Automotive Business Unit works with automakers, suppliers and consumers to create in-car systems that keep drivers connected any time, any place and with any device.

Its latest product is called Sync, a fully-integrated, voice activated, in-car communications and entertainment system. Sync, which is available on select Ford, Lincoln and Mercury vehicles, allows drivers to use their mobile phones, media players (e.g. iPods and Zune), and other devices via voice commands. Drivers can even listen to text messages with commonly used test messaging expressions, like "LOL," translated—and reply with any of 20 predefined responses.

Not only does Sync provide a new level of interactivity within a car, but it does so with driver safety in mind. The technology enables all this activity without the driver needing to take his or her eyes off the road.

Probing small components

Microsoft Automotive built and tested the prototype automotive telematics system that became Sync. The development group joined hardware and software developers together to create this unique system. Along the way, they became very familiar with Pomona Electronics test probes and grabbers.

"We use Pomona products to probe the small geometries of the various components on both sides of the board," said Steve Gripe, hardware development engineer for Microsoft Automotive. "The probes are really small and really sharp and let me get into the geometries of the things that I'm trying to measure.

"We often have to do that in the course of engineering prototypes and working through the software development process. The software and the hardware go through an iterative process and a synergistic iterative process where we build the hardware then they write some software to work on it. Then they find out 'Well, if you did the hardware a little differently it would work better and the software would work better.' So we change the hardware and they rewrite the software and we change the hardware and we go through that process for about a year and a half and in the end we come out with a 'perfect' system."

Minigrabbers and micrograbbers connect quickly to component test leads, terminals and integrated circuit leads. (Pomona models 5520, 5360, 4826)

Making short-term persistent connections

The interface between the Microsoft system and vehicle's systems is the control area network (CAN), which is essentially a network within the car that communicates with all the controllers. The Microsoft system uses the CAN to talk with the entertainment head unit and to play audio through the car's system.

"Pomona grabbers are useful for integrated circuits," Gripe said. "We have to make short-term persistent connections so having the ability to clip something on is of significant utility. The VMCU (vehicle mounted control unit) interfaces between our processor and the processor in the car. This is the intelligence behind the CAN connection. There's a CAN interpreter that turns CAN information into information our software can use."

For the majority of testing, the Pomona Precision Electronic Test Probe Set (6341) serves as Gripe's primary probes.

"We're always conducting some tests. Mostly we're looking at software behavior, but we're looking at it at the physical level, so we need to physically probe the device."

Precision electronic probes with gold pogo pin tips provide reliable contacts without damaging delicate solder joints. (Pomona model 6341)

Connected at any temperature

Sync is the second automotive project Microsoft has worked on. The first, with Fiat in Italy, is why they purchased the first of two environmental chambers for temperature testing—tests that can run from hours to weeks.

"Fiat was having some issues in their cold weather testing, so we were looking at the performance of a resettable fuse," Gripe said. "It wasn't working properly at cold temperatures because it wasn't rated for the temperatures they were testing it at. However, as the system designer, we were on the hook to explain the behavior of the system. So we had to replicate it here to explain what was going on. We did that in the temperature chamber over time—I think we set it up to run for a week."

Losing a connection during a week-long test would be a costly mistake, which is why Pomona reliability is so important.

"When we want to monitor a particular node in the system for temperature, we'll solder up something we can connect a clip lead to—a minigrabber or micrograbber—clip those up, run them outside the chamber and hook up our test equipment," Gripe said. "Having the robustness of the Pomona parts gives me confidence that over the temperature cycle I'm not going to have things falling apart in the middle of the test.

"We have done a number of tests that lasted a week or more in the chamber—temperature cycling from one extreme to the other and doing that a number of times over the course of a week. Having the leads fall off on the sixth day would be a really bad thing. That would set the entire test back—we can't afford that."

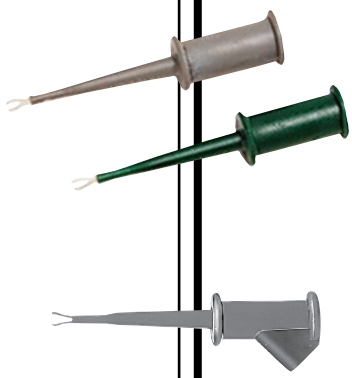
The feel of quality

Pomona reliability and robust performance are critical for the precision testing that Microsoft Automotive conducts. Craftsmanship is another.

"I look for something that has a smooth operation, like the Pomona Minigrabbers and Micrograbbers," Gripe said. "You squeeze them and there's no ratcheting or anything. It just has a quality feel to it that gives you the confidence that they're going to be there when you need them.

"I've tried them all and there is just no comparison, I keep going back to Pomona. It just works."

The products listed above may be seen at www.pomonaelectronics.com.



SMD grabber pincers make it easy to connect to today's small on-board components. (Pomona model 5360 and 5520)

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