



Work Smarter with Connected Pipettes

Automating some of the most taxing and repetitive tasks can help scientists save time and minimize errors in their work. When it comes to pipetting, there's a lot to keep in mind. These challenges make it harder to use a pipette perfectly, day after day. When mistakes happen, this threatens the reproducibility of the research.

And mistakes do happen - especially when it's nearing the end of the day at the lab. Just imagine: You've been transferring 10-microliter volumes of saliva from spit tubes to 96-well plates for hours, trying to get your plates done before you have to ship them off to get sequenced in the morning.

Your mind starts wandering, and doubt begins creeping into your mind. You're not sure which well to dispense in next or what volume you just transferred. You think to yourself, "when was the last time I got this thing calibrated, anyway?"

Micropipettes are incredible machines that make it possible for trained scientists to transfer small volumes of solutions accurately and to perform basic science. However, pipetting protocols are mundane and repetitive, and often have multiple steps. In this type of environment, mistakes can happen. Additionally, as many scientists know, it's also important to maintain routine service on your



pipettes. Minimal quality [procedures](#) for precision instruments require calibration at least once per year, and some labs require calibration as often as every 3 months.

Technological solutions to these problems are here. The [TRACKMAN® Connected system](#), complete with tablet and microplate accessories, works with Gilson's [PIPETMAN® M Connected](#) pipettes to assist researchers with pipetting actions and information about regular pipette maintenance needs. Additionally, it allows users to export their experiment results to secure servers, either in their own environment or in secure solutions, such as the [SciNote](#) Electronic Lab Notebook. These features improve the reliability of pipetting workflows while also reducing the chance that valuable data will get lost, something that happens disturbingly often. According to [one study](#), the chance of finding research data falls 17% each year.



Figure 1: TRACKMAN Connected System

The PipettePilot® app, which comes preloaded on the tablet, guides, automates, and helps researchers keep track of their pipetting activities. Instead of writing down a plate design for every experiment, the app allows researchers to use templates and customize their plates. An image of the user's labware appears on a tablet that fits under the actual plate. As a user dispenses a liquid into each well, LEDs illustrate which wells to pipette into and change colors once the well is filled. The app also instructs the PIPETMAN M Connected how much volume to dispense. It can automatically set aspiration volume and dispensing speed, as well as automate mixing of a solution, making operating the pipette simpler. The app can

also remind scientists to pre-wet their pipettes to increase accuracy.

PipettePilot automatically records every pipetting action and displays them in a report at the end of the experiment. Users can scan or type in batch serial numbers for microplates, tips, or other devices into their reports, and TRACKMAN Connected can also incorporate equipment photographs. This information provides proof of what actually occurred in the experiment and helps researchers better replicate the experiment.

PipetteScope®, another app that is included with the tablet or can be downloaded to your smartphone for PIPETMAN M Connected users, automatically records pipette usage history and enables researchers to easily observe the calibration history of their pipettes. The app alerts scientists when it's time for calibration and enables researchers to schedule service appointments with Gilson. All of this information helps scientists maintain accurate pipetting volumes.

Whether it's a simple pipetting error or a missed maintenance appointment, several factors can contribute to less reliable pipetting and reduce the reproducibility of research. Guiding, automating, and recording a pipette's usage, as well as the scheduling of calibration appointments, can help minimize the pipette as a source of error in laboratory workflows. This knowledge should give every researcher the power to generate verifiable data and give them greater confidence in their results.

SOURCES:

1. [17 Ways to Stop Pipetting Errors from Ruining Your Experiments](#)
2. [SLAS Press Release](#)
3. [Gilson Guide to Pipetting](#)
4. [Gilson TRACKMAN Connected Youtube video](#)
5. [TRACKMAN Connected User's Guide](#)