

QuiX Quantum Installs Real-Time Control Component for Universal Photonic Quantum Computer

QuiX Quantum's new Feed-Forward Control Unit supports rapid adaptive control required for universal photonic quantum computing

ENSCHEDI, NETHERLANDS, June 2, 2026 /EINPresswire.com/ -- [QuiX Quantum](#) today announced the first installation of its Feed-Forward Control Unit (FFCU), a high-performance hardware component developed for the company's universal photonic quantum computing architecture.



The FFCU is designed to help the system respond to quantum measurements in real time, an essential requirement for photonic quantum computers that encode and process information in single photons moving through optical circuits at extremely high speeds. This capability, known

as feed-forward control, is especially important for reaching universality in measurement-based quantum computing, where computation is carried out through a sequence of measurements and the outcome of one measurement can determine how later operations are performed. The FFCU performs this step at the hardware level by converting single-photon detector signals into control actions on photonic integrated circuits.

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*Stefan Hengesbach, CEO of
QuiX Quantum*

The FFCU is part of QuiX Quantum's broader quantum computing architecture, which brings together photon generation, multiplexing, state generation, measurement, photonic assembly control and feed-forward control into a

single photonic quantum computing stack. QuiX Quantum is working on its first-generation single-photon-based universal quantum computer, with the FFCU serving as one of the system-level components needed to support adaptive, programmable photonic quantum operations.

Considered a critical long-term goal by quantum hardware developers, a universal quantum computer will be able to run a broad set of quantum algorithms that can support a wider range of scientific, industrial and commercial applications.

“Universal photonic quantum computing requires more than high-quality photonic chips. It requires a complete system stack that can generate, route, measure and control photons in real time,” said Stefan Hengesbach, CEO of QuiX Quantum. “Our FFCU is a critical step in building that stack. It turns photon measurement outcomes into immediate control actions on photonic integrated circuits.”

QuiX Quantum’s FFCU combines FPGA-based digital processing with a custom analog front-end to support deterministic control of Mach-Zehnder interferometers on integrated photonic circuits. The current rack-mounted system includes two FPGA modules connected by a high-speed, low-latency bus, with 32 inputs, 32 outputs and a reported latency of approximately 150 nanoseconds from detector input signal to settled output voltage.

“Fast feed-forward is a prerequisite for universal photonic quantum computing because measurement-based architectures require the system to detect, decide and reconfigure the optical path in real time,” said Andrew Roos, vice president of R&D for QuiX Quantum. “To put that timing in perspective, in 150 nanoseconds light travels only about 30 meters in telecom fibre. That is the window in which the system has to make a decision and adapt the photonic circuit. This is not conventional control electronics — it is operating close to the physical limits at which information can move.”

The announcement comes as quantum computing gains commercial relevance, with McKinsey’s Quantum Technology Monitor 2026 reporting that more than 300 organizations are actively collaborating with quantum technology companies and estimating that quantum computing could create up to \$2.7 trillion in economic value worldwide by 2035.

For that value to materialize, quantum computers must become scalable, reliable and deployable systems that can work alongside classical HPC and AI environments. That places greater emphasis on the broader system layers needed to industrialize quantum machines, including control electronics. QuiX Quantum sees the FFCU as part of this enabling control infrastructure, designed to turn photonic hardware into adaptive, programmable, and scalable quantum computing platforms.

About QuiX Quantum

□ QuiX Quantum is a leading provider of photonic quantum computing hardware driving innovation across Europe in the development of its Universal Quantum Computer. The first system, already sold and contracted for delivery, underscores the impact of QuiX Quantum’s market-leading hardware and renowned quality. Following its expansion across Europe and UK, QuiX Quantum pushes the boundaries of quantum technology and industry, strengthening Europe’s international competitiveness, leveraging a wide network of partners while serving a

growing global customer base.

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