



BuildingPoint™

Digitization and Connected Construction

Volume Five: FieldLink MR Puts You Inside Site Plans



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FieldLink MR, available from BuildingPoint, is Trimble's fully immersive mixed-reality control interface for its field layout instruments. Find out how putting technicians "inside the plan" can save your business money by increasing productivity, improving clash detection and reducing training time.



What is FieldLink MR?

FieldLink MR is a fully immersive mixed-reality control interface for Trimble's layout instruments. It combines the XR10 headset, Microsoft's HoloLens 2 platform and Trimble's robotic total station to provide intuitive site navigation.

Using FieldLink MR, your company can streamline layout workflows by enabling crews to see exactly where a point is and intuitively walk straight to it. This provides true site context by clearly rendering the overall construction site as a model surrounding the viewer.

The FieldLink MR system reduces training requirements, enabling you to get your workforce up to speed faster. They can control the layout experience more naturally, with full control of the Trimble Layout instrument in fully immersive mixed reality.

Mechanical, electrical and plumbing (MEP) workflows are particularly effective applications for FieldLink MR. Immersive mixed reality simplifies underground plumbing and electrical layout.

Concrete footers, piers and anchor bolts are also easier to lay out using FieldLink MR. Laying out decks with hangers, sleeves or structural embeds is another popular FieldLink MR application.

FieldLink MR also streamlines quality assurance tasks like as-built documentation and site verification. Your teams can make more informed decisions and catch design errors earlier in the construction process by taking advantage of mixed reality visualization.

FieldLink MR Components

The components of the FieldLink MR system include the Trimble XR10 headset with HoloLens 2. It supports several existing Trimble Layout instruments, including the RTS773, the RTS873, the RPT600 and the Ri.

Using Trimble Connect, your business can use FieldLink MR with any of the common building information management (BIM) formats, including DWG, Navisworks, IFC, Revit, SketchUp, TRB, CSV, TFLX, TXT and more.

When your crews combine the visual context of the XR10 headset with the accuracy of any of Trimble's supported layout instruments, they can gain efficiency through intuitive navigation. They'll see exactly where a target point is and instinctively walk straight toward it.

FieldLink MR Advantages

Working with FieldLink MR provides a true site context. Your staff will gain a clearer mental image of the overall construction site when they can see the design model all around them.

This true site context reduces training requirements, enabling you to get your workforce up to speed in less time. Because they can control the layout experience more naturally, FieldLink MR makes new tasks easier to master.

Working with conventional tools, layout technicians have to learn to create a mental model of design data when they work onsite. Then, they have to translate mathematical directions from a tablet in order to find their way around the structure.

Onsite crews need a better way to understand the data in the context of the entire construction site. FieldLink MR meets this need by enabling layout technicians to see exactly where a point lies, and then walk directly to it.

This site context enables users to visualize the complete design while observing the physical site to make better decisions. At the same time, it reduces the time needed to lay out each point.

In summary, FieldLink MR provides three main advantages over conventional techniques. First, it **increases productivity** by enabling technicians to lay out points faster.

Second, FieldLink MR's true site context enables teams to **detect clashes earlier** in the construction process. Having a clearer understanding of tasks in the context of the overall project enables better planning and execution.

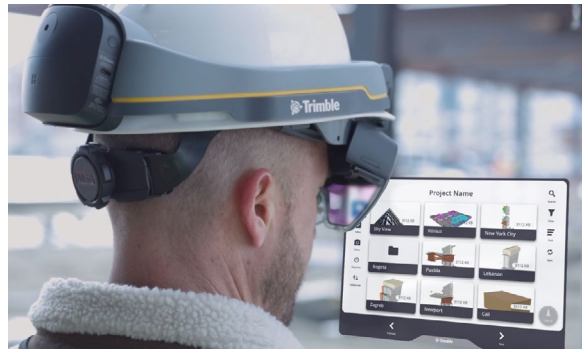
Thirdly, your company can **shorten its learning curve** for new hires, reducing the time they need to spend in training. You'll be able to increase productivity even faster, and orient experienced technicians to a new site in less time.

All these advantages save your company money. You'll be able to complete your projects **on time** and **within budget** while delivering **better quality** to your customers.



Key FieldLink MR Features

Trimble Connect and Offline Access: Your technicians can create their point files using FieldLink Office and then access them immediately in FieldLink MR via Trimble Connect. They can also download those files locally to access them from any job site or other location anywhere in the world. The system automatically updates project progress via Trimble Connect at the end of each workday.



Station Setup and Model Alignment: Technicians can position both their instrument and the model simultaneously using a single, simple workflow. This leverages the control you've already established onsite with existing tools.

Layout Points: It's always easier to lay out points when you can see them rendered all around you. The XR10 headset displays simple instructions to help you navigate between points onsite while accessing detailed BIM data to mark points out in the design context.

Collect Points: Teams can collect points live and in the field for quality assurance, as-built documentation or verification tasks. When they need to move instruments to maintain their line-of-sight, they can quickly establish new control points live in the field to calibrate later setups.

Layer Management: Your technicians can control the transparency and visibility of the layers FieldLink XM renders to represent models or points. This enables users to customize their views to support the way they like to work.

All-New Ways to Interact With Data: Onsite staff can control their FieldLink XM user experience in multiple ways. They can engage with data using their head (Head Gaze), their hands (AirTap) or even their voices (Voice Commands).

Customer Feedback

Jung-BM is an MEP contractor located in Zurich, Switzerland. They deliver multi-trade urban layouts to project stakeholders.

Crews at Jung-BM needed to mark out BIM data accurately and efficiently in the field. Technicians were

looking for ways to gain a clearer understanding of the design in the context of the physical site.

As owner Sven Jung explained, “On bigger projects you always have to interpret where you are in the plan, but with mixed reality, you are standing in the plan always at the right place, so there is no chance for misunderstandings.”

Now that Jung-BM technicians work completely hands-free, they can clearly and easily mark out relevant information in Laser Layout mode. Being fully immersed in the design as they move around the site helps them spot mistakes earlier and plan solutions before clash issues escalate.

FieldLink MR fits seamlessly into Jung-BM’s workflows. It also leverages existing applications like FieldLink, Trimble Connect and others.

As Sven Jung puts it, “I appreciate that Trimble brings it all together. I can use different platforms, hardware, software and now with FieldLink MR, Trimble brings the RPT and XR10 together for a more seamless workflow. I don’t have to interpret the plan - I am the plan. Instead of looking at it, I am in the middle of it, immersed in it - that is the biggest benefit.”



Power Design is a multi-trade contractor. They use FieldLink MR for underground pipe layout. Using conventional techniques, laying out hundreds of points takes time, and lacks the context of the 3D model. This can lead to costly errors, and redesigns that can cause confusion and delay.

When technicians can visualize layout points in the context of the 3D design, the process becomes more intuitive. It also enables users to make quick decisions in the field with confidence.

As Andres Sequera Jr., Power Design’s Survey Operations Manager puts it, “With FieldLink MR, you could give this to nearly anyone on site and they could do layout. Thanks to the clear visuals and interface, it’s obvious what to do.”

Using FieldLink MR to spot mistakes from the very beginning, Power Design saves significant time and money. They can get ahead of any necessary rework or redesign before fabricators produce and ship planned construction elements.

“Every job has to start with underground utilities,” Sequera explains. “FieldLink MR adds so much value at the early stage of these projects by showing you exactly what your design looks like. Seeing the underground piping, electrical, and more makes the start to a new project so clear.”

Frequently Asked Questions

How accurate is FieldLink MR?

FieldLink MR has exactly the same accuracy as the tablets your team uses now. Accuracy is a function of the total station technicians use. Mixed reality is simply another way to visualize the same data.

Does FieldLink MR work with any total station?

FieldLink MR version 1.0 supports the RTS773, RTS873 and RPT600.

How do I upload data to the XR10 headset?

Trimble Connect uploads the data, making it accessible directly on the XR10.

What languages are supported?

FieldLink MR version 1.0 supports English. Trimble will be adding more languages with subsequent releases.

Can I layout visually, based on the holograms?

The total station improves the accuracy of the hologram's positioning. The holograms cannot support layout without connecting to a total station.

Does FieldLink MR work outside?

Yes, with some limitations. As with similar digital devices, it can be difficult to read the XR10 display in bright sunlight. The optional Trimble HoloTint sunshade snaps onto the front of the XR10 to improve readability in sunny conditions. Even so, variations in lighting conditions can limit FieldLink MR's tracking capabilities when working outdoors.

BuildingPoint Can Help

To learn more about how FieldLink MR can help your business deliver field layout projects more effectively, contact BuildingPoint today. Our team can help you get the most productivity and profitability out of all our BIM products—from set up to constructible solutions, training and implementation.



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