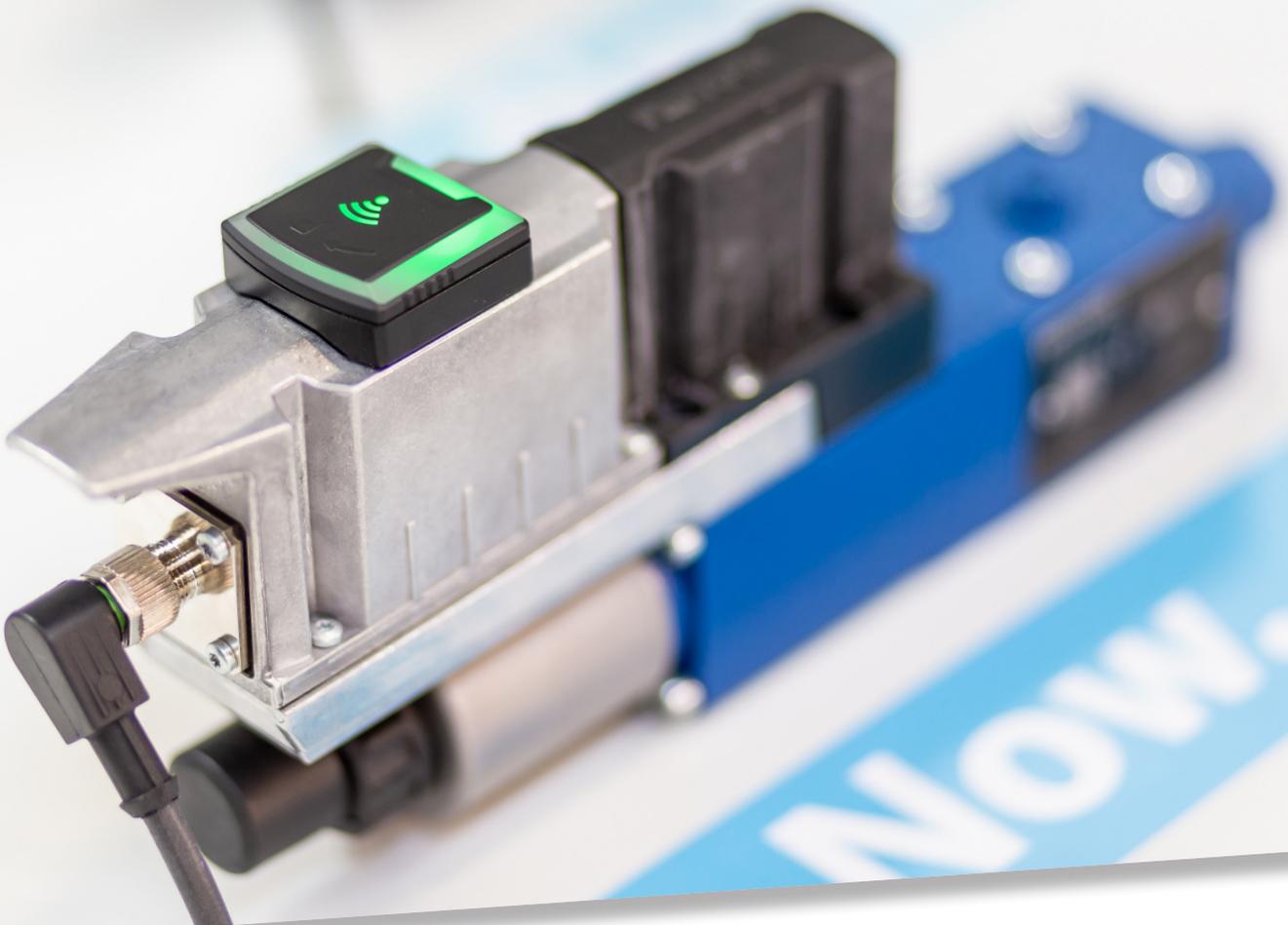


# Explore the world of hydraulics via app

Operating new digital on-board electronics

is child's play with smartphone and Bluetooth



**Setting hydraulic valves manually with a multimeter and wrench? That was yesterday. Today, all you need is a mobile phone app and a Bluetooth connection to start using Rexroth hydraulic components with the new digital on-board electronics, adjust them during operation and carry out diagnostic tests. This not only saves machine manufacturers time and money – for users it means greater flexibility for process changes and improved availability.**

When newly developed hydraulic components are used, the aim is always to improve performance through higher dynamics or a longer operating life. However, easier handling, the facility to change parameters flexibly and diagnostic capabilities are even more important for many machine manufacturers and users. This is where Rexroth comes in with new digital on-board electronics, open interfaces and app-based engineering tools. These developments have noticeable results for constructors, commissioning engineers, operators and service technicians. It is becoming more and more easy to use hydraulic systems. In addition to the familiar tools such as wrenches and multimeters, new technologies such as smartphones and apps are gaining ground.

## DIGITAL ACCESS WITHOUT FIELDBUS

With the newly developed generation of digital on-board electronics for hydraulics, Rexroth allows scaling between analog components and those with a fieldbus/Ethernet connection. As a result, it is possible to take advantage of the economic benefits of digitalization. The new generation provides the open interfaces IO-Link and Bluetooth. In conjunction with a suitable app, commissioning engineers, operators and service technicians can access components and change parameters using their smartphone – directly and independently of the machine control system. They simply need to download the app from the relevant platforms and install it. It is already online for the Android operating system.

## LESS CABLING WORK

The first components to feature the new digital on-board electronics are the newly developed pressure regulating valves. In terms of hardware, they offer improvements thanks to volume flow-independent pressure regulation and a linear command value/pressure characteristic with four pressure levels. The plate structure or intermediate plate versions offer a great deal of freedom for construction. The valves have an integrated pressure sensor as well as a connection for external pressure sensors. As a result, the system pressure is controlled by the pressure-regulated proportional valve with a closed control loop. The design with the protection class IP65 maintains the robustness of hydraulic systems.

The fact that connecting the new valves involves much less cabling work reduces the need for additional components and makes the valves particularly attractive to machine manufacturers. As a result, the system costs for hardware alone are lower than those for the analog valves previously used. The valves not only reduce costs – they save time during the initial commissioning too. Up until now, technicians had to set up the hydraulic components in the control system or engineering software on a note-



book and parametrize them from scratch. In certain cases, external measuring devices such as multimeters had to be connected and set mechanically.

With the new on-board electronics, technicians simply take out their smartphones, open the app and connect to the component via Bluetooth. It identifies itself via its digital name plate and, after a few moments, the technicians can retrieve the status information and start the parametrization process. As a result, they adapt the behavior of the valves to suit requirements via Bluetooth, even with analog-controlled devices. An LED lights up blue during the connection and shows the commissioning engineer which proportional pressure reduction valve they are currently connected to.

## GAMIFICATION SAVES TIME

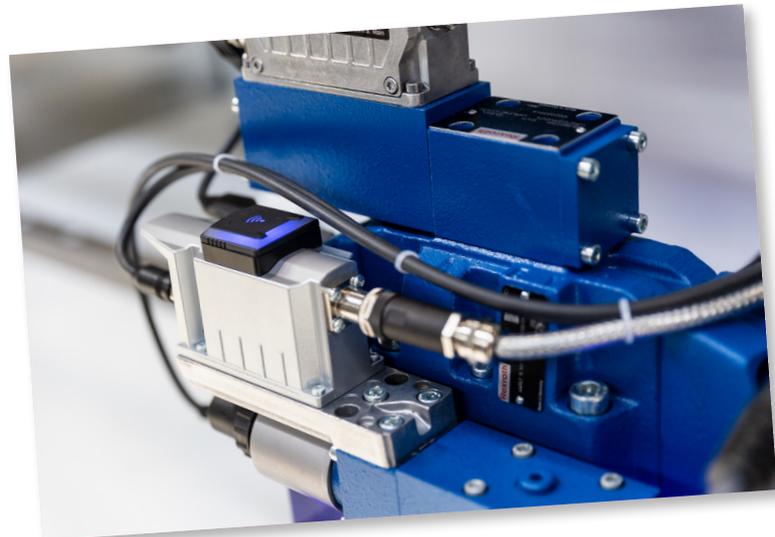
The software for the new pressure regulating valves has around 20 parameters. Commissioning engineers do not need to call up these parameters individually – they can select from Rexroth’s predefined parameter sets. They can also save parameter sets they have defined themselves and transfer them to identical valves. Commissioning takes place independently of the control system which allows commissioning activities to be parallelized.

The new patented slider for setting the dynamics is a particular feature. The app therefore uses operating elements encountered in gaming and makes operation easier through gamification. When the slider is moved between “Moderate” and “Aggressive”, the app’s software automatically adjusts all corresponding parameters. For each cycle, the technician moves the slider on the smartphone and can very quickly set the optimum dynamics. Because there is no need to define individual parameters, users can optimize the system very delicately.

## GREATER FLEXIBILITY FOR USERS

The new on-board electronics makes life easier for end users too and significantly increases flexibility for process changes. If for example a tool which is twice as heavy is used on a press, a different valve would often have to be used on previous machines. With the new generation, it is sufficient to bring up the app in order to adjust the parameters accordingly. As a result, the end user can save the money needed for a conversion and the resulting machine downtime is avoided.

During everyday use, the on-board electronics increases availability and speeds up troubleshooting even without a fieldbus connection. The LED which lights up blue when there is a Bluetooth connection to a smartphone changes to green when the system is operating smoothly. If it is red, this means that there is a fault. Using the app, the operator or member of service staff can then call up details of the faults such as a cable breakage in the form of clear text. If a valve needs to be replaced, the maintenance technician transfers the parameters from the master.



In addition, end users can use condition monitoring with no additional outlay. Via the app, they call up operating data such as the temperature or operating hours using the Diagnostics button. This helps to prevent nasty surprises. Via IO-Link, users can automatically set up this status monitoring in the machine control system too. Condition monitoring extends the operating life of components and increases availability. If wear is identified early on, maintenance staff can plan appropriate measures and thus avoid a machine downtime.

The new on-board electronics makes commissioning, operation and diagnostics for the hydraulic system easier, even for staff who do not have an in-depth knowledge of fluid technology. It brings together the physical benefits of hydraulics with digital access, modern app technology and intuitive gamification. In short, keeping control of forces is child’s play.