



More than **sensors + automation**



Chemical Industry

Innovative solutions for your success





Dear Reader,

Chemical products surround us in our daily lives. But only manufacturers know just how much the production of these materials depends on reliable processes and accurate measurement technology.

JUMO is a reliable partner with comprehensive know-how who stands by your side, supports you in all your questions, and delivers solutions.

No matter what your requirements for measurement technology are, JUMO will always meet them. Regardless of whether these are for the raw and extreme ambient/process conditions of the petro chemistry or the requirements of basic, special, and fine chemistry: JUMO has a fitting solution for the specific applications of these industries.

How do we do it? With many years of experience and a high level of expertise. JUMO has been one of the leading manufacturers of measurement and control technology for over 60 years and, consequently, is a professional partner in the chemical industry.

We place great value on regular new developments, constant improvement of existing products, and on production methods that are always becoming more economical – because only this path allows us to achieve the highest degree of innovation for you.

We at JUMO offer you only the best in the chemical industry as well – in particular a multitude of solutions for the most varied applications.

This brochure provides an overview of JUMO's products and systems for the chemical industry. Of course, we are also happy to work together with you to create customized solutions for individual requirements.

On that note:

May process reliability always remain consistently high!

PS: Further information about our products can be found at www.industry.jumo.info using the specified type/product group.

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Temperature

Temperature is the most important measurand in the chemical industry: it affects the used raw materials and must be precisely controlled as well as monitored to prevent variations in quality and unwanted reactions. Premium systems from JUMO help you during these processes.



Temperature sensors

JUMO delivers a wide range of temperature probes for reliable and precise measurement results to meet the different requirements in the chemical industry and process technology.

Whether for an RTD temperature probe or thermocouple – we take your needs into account and manufacture temperature probes that are exactly tailored to the measuring task.

Materials

For chemical processes that could not be more different, chemically resistant materials must be used. We offer you the material that you need for your process (e.g. CrNi-steels, titanium, tantalum, Inconel®, HASTELLOY®, ceramic).

Dial thermometer

Accurate temperature measurements independent of an energy source are often required in the chemical industry. JUMO offers products that are up to the extreme conditions in the chemical industry.

JUMO PROCESStemp
RTD temperature probe
for process technology
Type 902820



JUMO Screw-In RTD Temperature Probe
With pressure encapsulated
terminal head
Type 902820



JUMO Dtrans T100
RTD temperature probe
without transmitter with
ATEX approval for
Pt100/Pt500/Pt1000
Type 902815



JUMO RTD Temperature Probe
J-Head
Type 902030



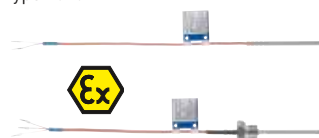
JUMO Wtrans Transmitter
RTD temperature probe
with wireless/data transmission,
with temperature-resistant
electronics deployable up to 125 °C
Type 902930



JUMO Wtrans Receiver
For RTD temperature probe
with wireless/data transmission
Type 902931



JUMO Screw-in/Push-In RTD Temperature Probe
With connecting cable
Type 902821



JUMO Mineral-Insulated Thermocouple
According to DIN EN 43710 and DIN EN 60584
Type 901221



JUMO Dial Thermometer
With bimetal measuring system
Type 608003



JUMO Contact Dial Thermometer
In stainless steel case
Type 608521





Pressure, level, flow

In addition to temperature the measurands pressure, level, and flow also play a major role in the production and processing of many chemicals. We have developed a number of high-quality pressure measuring devices to support you in this task.



Pressure measuring devices

Our pressure measuring devices have withstood the demanding requirements of the chemical industry for years. They are produced according to PED and can be used in explosion-protected areas.

Whether process pressure, level, or flow: with JUMO, you are ready for everything. Our pressure measuring devices can be adapted to all processes. Various special materials are available for corrosive media. Use standard devices to measure hot media up to 200 °C. We can also resolve extreme cases with pressure separators or plastic housing.

You can use the JUMO dTRANS p20/p20 DELTA process pressure transmitter series for all pressure measurement tasks in the industry. The external control knob enables you to operate the device even in explosion-protected areas without having to open it.

With the differential pressure transmitter, you can also resolve flow and level tasks.

JUMO dTRANS p20 / p20 DELTA

Process pressure transmitter with display
Types 403022, 403025, 403026



Pressure Transmitter and Level probes

With ATEX approval –
up to 200 °C medium temperature
Type 404753



JUMO MAERA F27

Level probe in plastic version
for aggressive media
Type 404391



JUMO DELOS SI/HP

Precision pressure transmitter with switching contact and display
Types 405052, 405054



JUMO PINOS L01

Flow sensor
Type 406040





Humidity

Do you produce dry pulverized products?

Then humidity definitely plays a decisive role in your production plant.

JUMO also offers reliable measuring systems that can help you to monitor processes like this.



Humidity sensors

Humidity measurement plays an important part in powder production, particularly when hygroscopic substances are involved. The intrinsically safe hygrothermal transducers from the 907025 series provide the ideal solution for measuring humidity and temperature under extreme process conditions.

These intrinsically safe industrial measuring probes are the first choice for determining humidity, temperature, and derived measurands. The measuring probes are extremely robust and are based on the latest sensor technology. Due to the microprocessor controlled electronics and a large number of options the devices can be applied with a high degree of flexibility.

Furthermore, they can be installed completely in areas that are classified as a permanent explosion hazard.

On the other hand, the capacitive hygrothermal transducer is a convincing solution with intelligent interchangeable probes. These can be replaced in seconds and calibrated separately. The robust metal case ensures a long service life, even in harsh operating conditions.

Intrinsically Safe Industrial Measuring Probe

For humidity, temperature, and derived measurands
DIN 43710 and DIN EN 60584
Type 907025



Industrial Measuring Probe

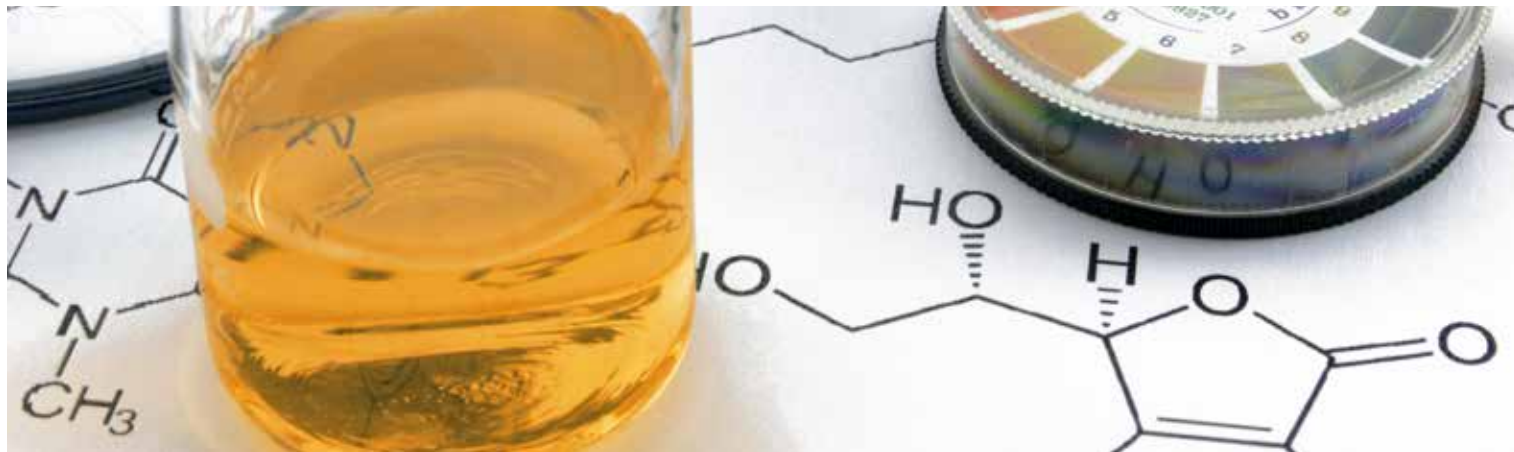
For humidity, temperature, and derived measurand
DIN 43710 and DIN EN 60584
Type 907023



Capacitive Hygrothermal Transducer

With intelligent exchange probes
Type 907027





Liquid analysis

In addition to devices that record classic parameters like temperature, pressure, and humidity in the fields of production, storage, and refinement of chemicals, JUMO also offers measuring devices and sensors for use in liquid chemical media (e.g. for pH-value and conductivity measurement).



Liquid analysis

However varied the chemical processes and requirements of the chemical industry may be, they all have one thing in common – they generate wastewater.

With the JUMO CTI-750 and JUMO AQUIS Ci conductivity transmitters you can safely and reliably determine the wastewater conductivity.

The pH-value plays a major role throughout the chemical industry. Whether you use this parameter for water treatment, final product inspection, or wastewater treatment, JUMO's wide range of electrodes measures up to all requirements.

Due to the modularity of the JUMO dTRANS pH/CR/AS/02 device series you can easily implement multichannel measurements. For example, you can simultaneously measure pH-value, temperature, and chlorine concentration or also implement double pH-value or double conductivity measurements. Aside from all the classic possibilities of a liquid analysis controller and transmitter you can use the new special functions: flow measurement, data logger / log book function, and safe pH-value determination.

JUMO CTI-750

Conductivity transmitter with plastic or stainless steel case
Type 202756



JUMO AQUIS touch S/P

Multichannel measuring device for liquid analysis
Types 202580, 202581



JUMO tecLine pH/JUMO tecLine Rd

pH-value and redox combination electrodes
Type 201020



JUMO tecLine CR

Conductive two-electrodes conductivity sensor in stainless steel or titanium version
Type 202924



JUMO AQUIS 500 pH/CR/AS/Ci

Transmitter/controller series for pH-value, redox voltage, concentration of ammonia, chlorine, chlorine dioxide, ozone, conductive and inductive conductivity, and temperatures
Types 202560, 202565, 202568, 202570



JUMO dTRANS pH/CR/AS 02

Compact multichannel transmitter/controller series for liquid analysis
Types 202551, 202552, 202553



JUMO dTRANS 02 01

Transmitter/controller for dissolved oxygen (DO) – with isolated operating unit
Type 202610



JUMO tecLine CR-4P

Conductive four-electrodes conductivity sensor
Type 202930





Controlling

Plant-specific solutions for process monitoring/controlling during the production of chemicals can only be ensured if, in addition to the sensor design, the control of the measurands is also correct. JUMO's systems are perfectly suited for this task.



Controlling

Extremely accurate controllers are required as soon as several physical measurands such as time, temperature, or pressure have to be precisely monitored in a process.

The cooling or tempering of processes in a chemical production plant can be quickly and precisely regulated with our electronic microstates. Our iTRON, cTRON, and dTRON compact controller series were developed for more complex tasks and can reliably resolve many control tasks. They have a variety of interfaces to ensure communication with process management systems.

The IMAGO series is available for demanding control tasks in complex processes. The IMAGO 500 with color screen and 50 time planning programs offers optimum operation and allows secure control of diverse parameters. With multichannel options it is possible to regulate, monitor, or control different processes such as the flow, pressure, temperature, or level of a system universally in a single device.

Accurate adjustment is particularly important with chemical processes to avoid such consequences as overheating. In this situation, an integrated cascade controller in the JUMO IMAGO 500 enables the highest process controlling quality.

JUMO mTRON T – Multifunction Panel 840

Measuring, control, and automation system
Type 705060



JUMO mTRON T – Central Processing Unit

Measuring, control, and automation system with controller module and input/output modules
Type 705000



JUMO IMAGO 500

Multichannel process and program controller
Type 703590



JUMO DICON touch

Two-channel process and program controller with paperless recorder and touchscreen
Type 703571



JUMO cTRON

Compact controller with timer and ramp function
Type 702070



JUMO dTRON

Compact controller with program function
Type 703041



Compact Laboratory Controller LR 316

In plastic desktop case
Type 700703





Recording

Are you familiar with JUMO LOGOSCREEN? With the devices in this family of paperless recorders you are ideally equipped to collect, archive, and evaluate measured values that must be verified in a tamper-proof manner.



Recording, archiving, and evaluating ...

... are well-known concepts in measurement technology, defined by the recorder device group. JUMO paperless recorders quickly and securely record process data, save and archive it, and make it accessible to the PC for tamper-proof evaluation.

JUMO mTRON T ...

... enables the construction of a decentralized measured value recording system for collecting and archiving up to 54 analog measuring channels and 54 digital channels.

JUMO LOGOSCREEN 500 cf ...

... was designed as a high-quality replacement for paper recorders and is the basic device in the JUMO paperless recorder series. It features a maximum of 6 universal inputs, a 5.5 TFT display, and the option for monitoring limit values. In addition, the paperless recorder has network-capability.

JUMO LOGOSCREEN nt/fd ...

... fulfills demanding recording tasks such as batch reporting, combining process data math and logic, can visualize data online via web server, and the "fd" version fulfills the requirements of FDA 21 CFR Part 11 concerning electronic recording of process data.

JUMO mTRON T – Multifunction Panel 840

Measuring, control, and automation system
Type 705060



JUMO mTRON T – Central Processing Unit

Measuring, control, and automation system with controller module and input/output modules
Type 705000



JUMO LOGOSCREEN 500 cf

Paperless recorder with CompactFlash® card as storage media and lifecycle data management
Type 706510



JUMO LOGOSCREEN nt/fd

Paperless recorder with TFT display, CompactFlash® card and USB interfaces, stainless steel design, and sensor control panel; FDA-compliant data recording with type fd
Types 706581/706585



21 CFR Part 11



JUMO DICON touch

Two-channel process and program controller with paperless recorder and touchscreen
Type 703571





Monitoring

Monitoring is especially important in the chemical industry to protect people, plants, and the environment. With JUMO you can operate your plant safely, whether with electronic or electromechanical products.



Plant monitoring with electronic or electromechanical thermostats

In the chemical industry you are on the safe side with JUMO safety thermostats.

Whether in trace heating, in pipelines, or in the frost-protection field – easy mounting, easy operation, and secure operation allow you to use quality and save costs.

Deviations from required temperature values have a direct influence on the characteristics of the chemical product. This is why temperature monitoring is a critical task in the chemical industry.

Safety-oriented temperature monitoring is especially important in plants where enormous risks for people and the production plant exist when the set limit values are not maintained.

To prevent such irreversible damage, JUMO offers you electronic or electromechanical thermostats that constantly monitor your plant. They provide a decisive advantage: if the maximum temperature of the plant is reached then the thermostats, which are approved according to DIN EN 14597, switch off to be on the safe side.

JUMO safetyM STB/STW/Ex

Safety temperature limiter, safety temperature monitor acc. to DIN EN 14597
Types 701150, 701155



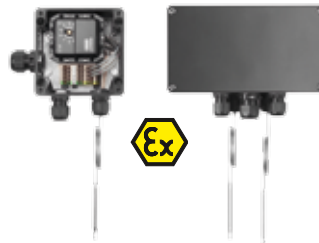
JUMO safetyM TB/TW

Temperature limiter/monitor acc. to DIN 14597 as insertion and DIN-rail device
Types 701160, 701170



JUMO exTHERM-AT

Single and double surface-mounted thermostat
Type 605055



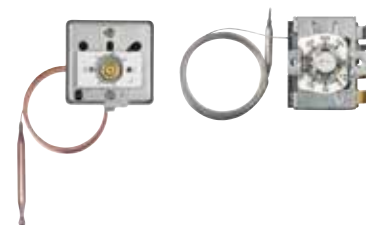
JUMO heatTHERM-AT

Surface-mounted thermostat
Type 603070



JUMO heatTHERM

Panel-mounted thermostat / series EM
Types 602021, 602031



Surface-Mounted Thermostat

ATH series
Type 603021



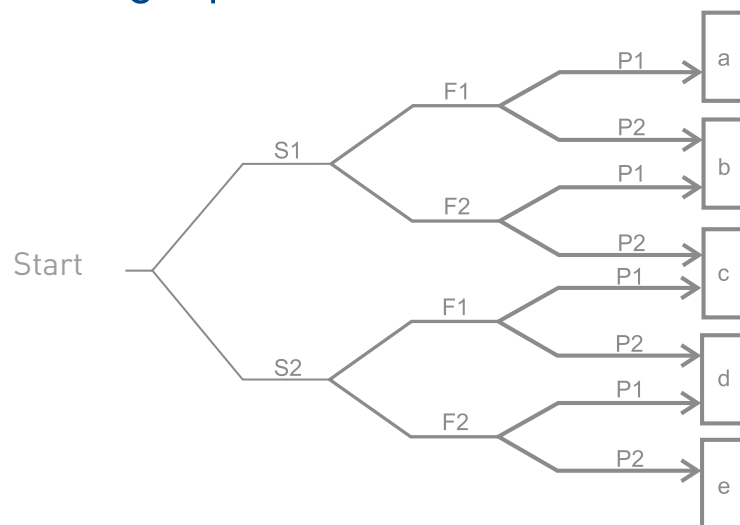


Plant availability and process reliability

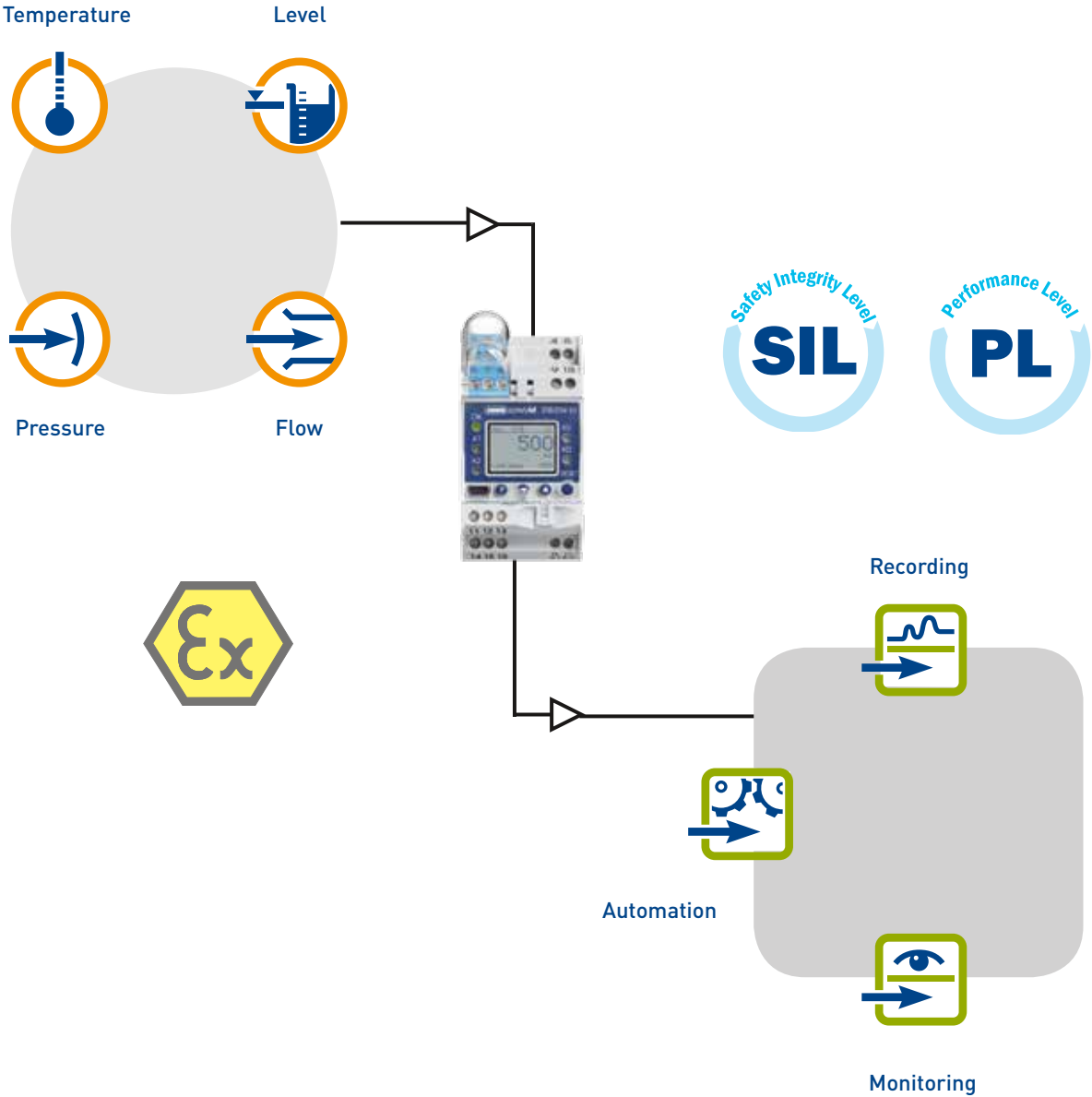
For functional safety – even in Ex-areas

- Safe monitoring and shutoff of safety systems
- Functional safety up to SIL3; performance level up to PL e
- Redundant structural development of the sensors and evaluation channels
- Simple to configure and individually adjustable to the process requirement
- Approvals according to SIL, PL, ATEX, and GL
- Connection of different measurands through the widest range of sensors
- Variable system adaptation to the widest range of actuators

Risk graph



The suitable solution for every risk rating.





Automation

Reliable systems are needed for smooth processes.

You can also find these at JUMO. From transmitters to simple indicators through to a decentralized automation system, we offer you everything you need to automate and visualize your entire process.



Power under control with JUMO SCR power switches

A typical application is the drying of such things as granulate materials. The precise switching with the SCR power switch or SCR power controller allows you to achieve the highest level of drying quality. The heat output can be finely metered which leads to the highest level of reliability.

Temperature transmitter

You can find the right transmitter for your process here. Whether for head or mounting rail installation, the converter transforms the temperature determined by the connected temperature sensor into a precise standard signal for further processing in your chemical production plant. In Ex-applications, the Ex-i repeater power supply / input isolating amplifier ensures secure separation of the Ex and non-Ex area.

JUMO mTRON T automation system

You can flexibly control your processing plant with the JUMO mTRON T system. The integrated CODESYS PLC controller enables individual PLC program generation according to IEC 61131-3. The program editors with online debugging, which are integrated in the configuration program, support you during program generation.

JUMO TYA-201 /-202

SCR power controller
Types 709061/709062



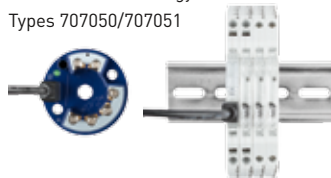
JUMO TYA-432

SCR power switches
Types 709010/709020



JUMO dTRANS T05

Programmable transmitter in two-wire technology
Types 707050/707051



Ex-i Repeater Power Supply/ Input Isolating Amplifier

Type 707530



JUMO dTRANS T02 Ex

Programmable four-wire transmitter
Type 707025



JUMO dTRANS T01 HART®/Ex

Programmable two-wire transmitter
Types 707013/707016



JUMO mTRON T

Measuring, control, and automation system
Type 705000



JUMO di08 / di308

Digital display unit
Types 701531/701550





JUMO mTRON T – Your System

The scalable measuring, control, and automation system

System layout

JUMO mTRON T is modularly designed and uses an Ethernet-based system bus and integrated PLC, even for non-centralized automation tasks. The universal measuring, control, and automation system combines JUMO's extensive process know-how with a simple, application-oriented, and user-friendly configuration concept.

The core element of JUMO mTRON T is the **central processing unit** with a process image for up to 30 input/output modules. The CPU has higher-level communication interfaces including web server. The system has a PLC (CODESYS V3) for individual control applications, program generator, and limit value monitoring functions as well as math and logic modules.

The following components are available as **input/output modules**: the **four-channel analog input module** with four electrically isolated universal analog inputs for thermocouples, resistance thermometers, and standard signals. These modules enable precise recording and digitizing of process variables with the same hardware which simplifies planning, resource management, and stockkeeping. **Multichannel controller modules** support up to four independent PID control loops with a fast cycle time and proven control algorithm without placing any load on the central unit. The system allows for simultaneous operation of up to 120 control loops and meets the needs of demanding control processes.

Optional slots can be used to extend and adapt the inputs and outputs of each controller module individually. The **multifunction panel** provides visualization of data as well as convenient operation of the controller and program generators. User-dependent access to parameter and configuration data of the overall system is also possible. Recording functions of a high-quality paperless recorder, including web server, are implemented as a special feature. Proven PC programs with standard predefined screen templates are available for reading and evaluating historical data. A setup program is used for **hardware and software configuration** as well as project design for control tasks and recording measurement values. Users can create their own highly efficient automation solutions with CODESYS editors in accordance with IEC 61131-3. The entire application is recorded in a single project file.



Com 1 —
RS422/485 or RS232,
Modbus master/slave

Com 2 —
RS422/485 or RS232,
Modbus master/slave
or PROFIBUS-DP slave

Expansion of
system bus



LAN

System bus



Com 1
RS422/485 or RS232,
Modbus master/slave
connection
Barcode scanner

Com 2
RS422/485 or RS232,
Modbus master/slave

USB
Host and device

- Web browser
- Setup program
- PCA3000 PC evaluation software
- PCA communication software PCC
- Plant visualization software SVS3000
- CODESYS programming system

Expansion of
system bus



