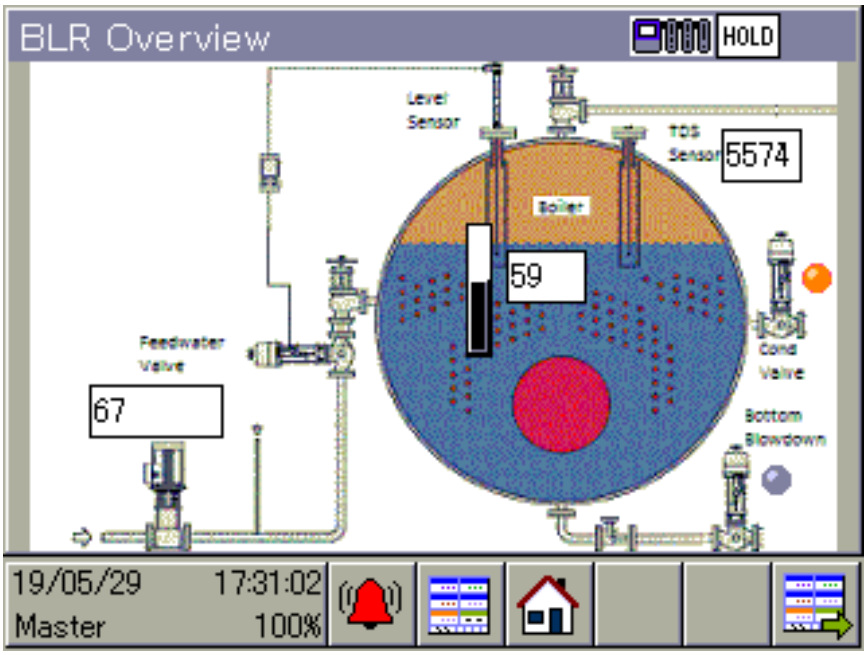
Multichannel Boiler controller Type REmult Touch-P

Data sheet 7010

Modular 4-channel Boiler Controller with Integrated Functionality and Paperless Recorder



Brief description

The REmult touch P multichannel boiler controller provides a central platform for the display and processing of control values, e.g. boiler water level control , boiler automatic continuous blowdown (TDS) control, boiler intermittent bottom blowdown control, display of feed water temperature or deaerator pressure under the various options available. The unit can measure and manage up to 2 parameters simultaneously.

Control

Besides numerous simple alarm, limit value or time controlled switching functions, up to 4 higher order control loops can be defined in the REmult touch P at the same time. Tried and test ed RTK control algorithms are used for P, PI, PD, and PID control in these applications.

Displays

A 3.5" TFT color screen with touch function serves to display all parameters as well as operate and setup the device. The plain text operation philosophy virtually eliminates the need for a manual. German, English, and, on request, French are included in the device at the factory as selectable user interface languages (see order details). Using the PC setup program, the language -library of the unit can be expanded to as many as 15 languages. It is also possible to display languages that use Chinese and Cyrillic characters. As a result, the device is predestined for global use.

Available versions of Remult Touch P:

There are three versions of the controller.

1) **REmult Touch P-1**: a basic version of boiler controller with only 2 channels. It displays the Boiler Overview scfreen, detailed boiler water level screen, detailed Boiler TDS screen with a subscreen showing the operating state of the continuous blowdown and bottom blowdown valves. An analogue input and output for level control is provided, and an analysis block for TDS control function. Three binary inputs are available, for TDS valve fully shut, 1st low level and 2nd low level alarms from the EXTERNAL level alarm switches. Six binary outputs are also available for various alarm indications, 4 level alarms and 2 TDS alarms.
2) **REmult Touch P-2**: a version with 4 channels. The first two channels are similar to Remult Touch P-1, and the 2 further channels can accept binary values, e.g. feed tank water temperaure, and boiler inlet feed water temperature after the economiser.
3) **REmult Touch P-3**: this version is also a 4 channel version but the 3rd channel can accept an analogue input with a binary output. This channel could be used for feedtank On-Off level control. The 4th channel can accept a temperature input, e.g. feedtank temperature

Features available:

- Up to 2 analysis inputs in any combination for direct connection of continuous level sensor and TDS probe.
- Up to 21 further measuring signals can be connected either directly or via interface
- 2 pulse frequency inputs for flow measure ment (max. 300 Hz or 10 kHz)
- Up to 10 switching outputs that are configurable as controller, switching, and alarm outputs
- Interfaces: USB host, USB device, Mod bus, PROFIBUSDP, PROFINET IO and Ethernet
- Ethernet functions: webserver, alarm alerts via email, setup via PC, extraction of recorded measurement data
- Math and logic functions
- Integrated timers, washtimers, and calibration timers (e.g. for boiler bottom blowdown)
- Service and operation hours counter
- Processdata recording with tamperproof storage
- Vibrant TFT color graphics screen with 3.5" diagonal screen sizes, 320 × 240 pixels, and 256 colors
- Intuitive operation via touchscreen
- Configurable user rights
- Freely configurable operation screen
- Control panel installation housing according to DIN IEC 61554 (protection class IP20)

Please call us to discuss your exact requirements

RTK CONTROL SYSTEMS

RTK Control Systems is the trading name of STL Power & Process Controls Ltd. Registration No. 3502538
Tel: 01462 480121 Email: info@rtk.co.uk website: www.rtk.co.uk

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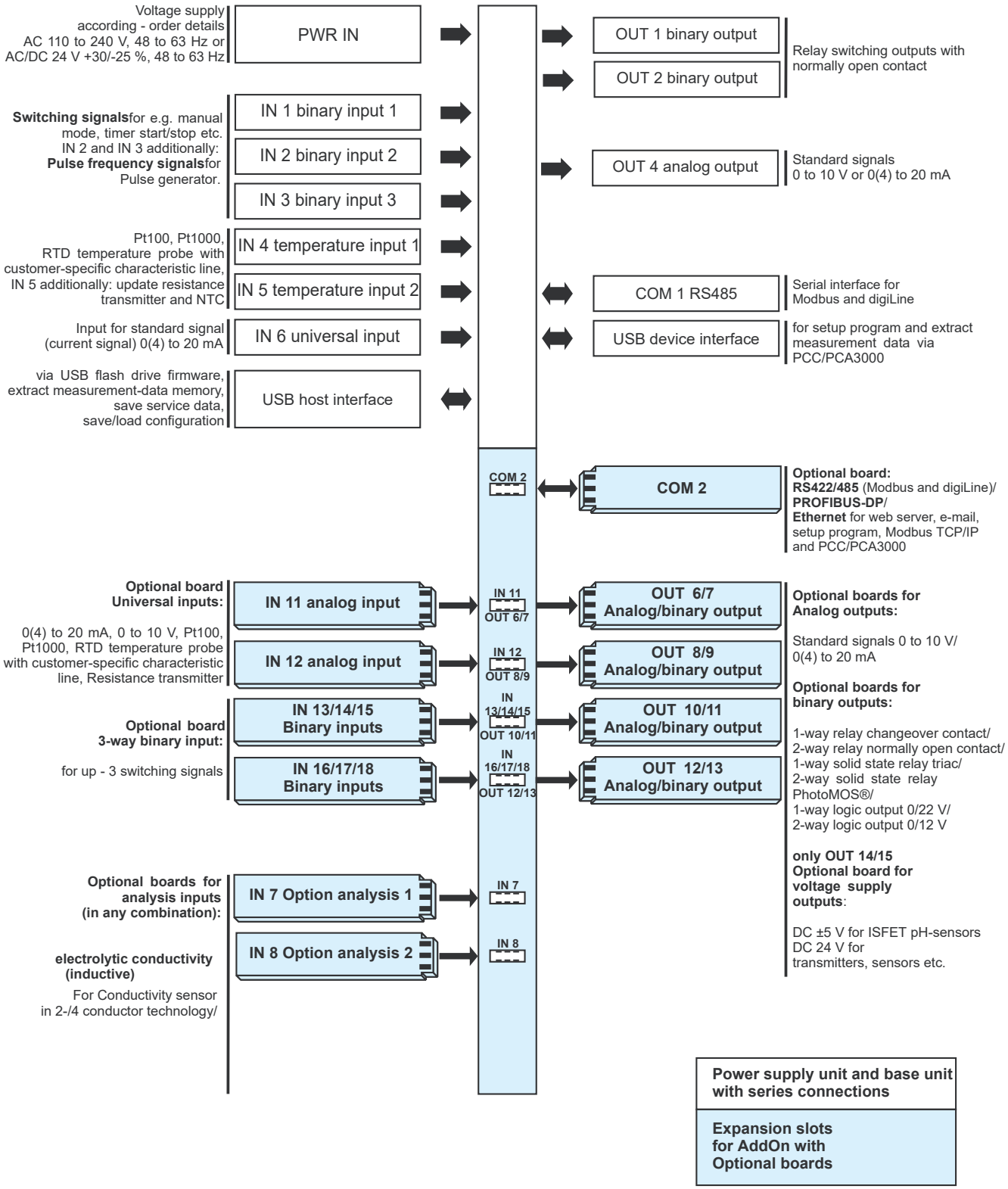
Overview Block diagram



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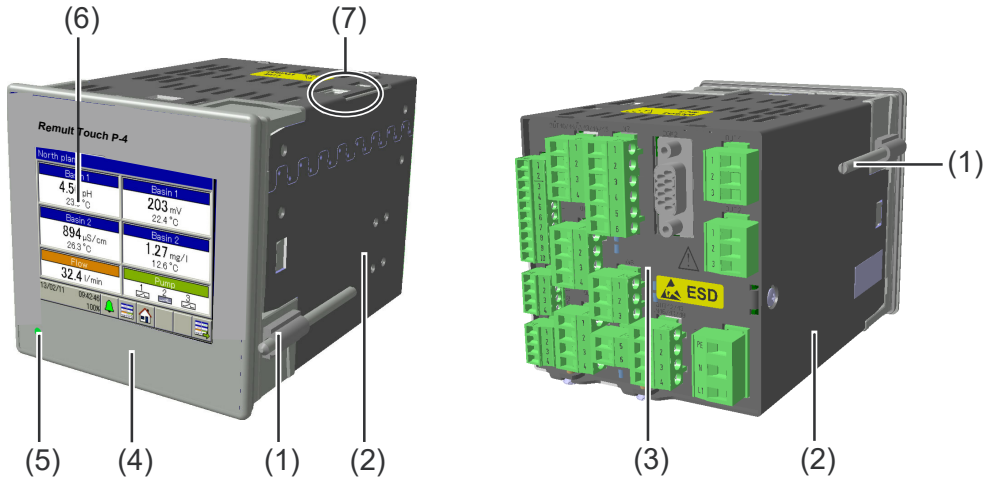
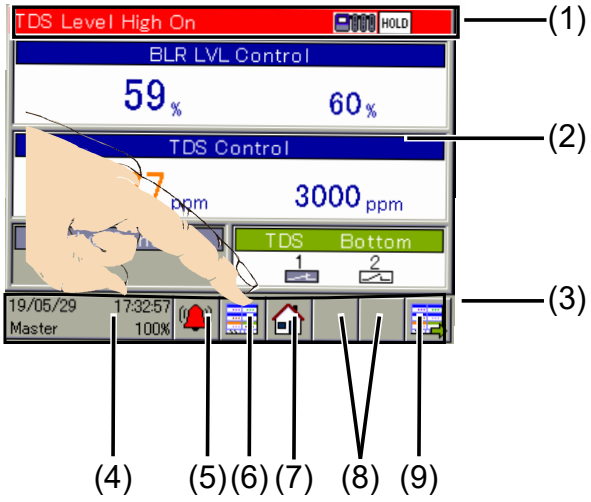
Device setup



(1) Mounting elements
(2) Metal case barrel
(3) Back panel with connection terminals (base unit and optional boards)
(4) Case front
(5) LED (voltage supply turned on)
(6) Touchscreen TFT color monitor
(7) USB interfaces

Display and control elements



(1) Title bar
(2) Touchscreen
(3) Toolbar with buttons for operation
(4) "Device settings menu" button with:
- Display of date, time
- Loggedin user ("Master" in the example)
- Remaining memory display in percent for recording function (in the example: 100 %)

(5) "Alarm/Event List" button
(6) "Select operator screen" button
(7) "Home" button (back to main screen)
(8) Place holder for context sensitive buttons (assignment based on operator screen concerned)
(9) "Next operator screen" button

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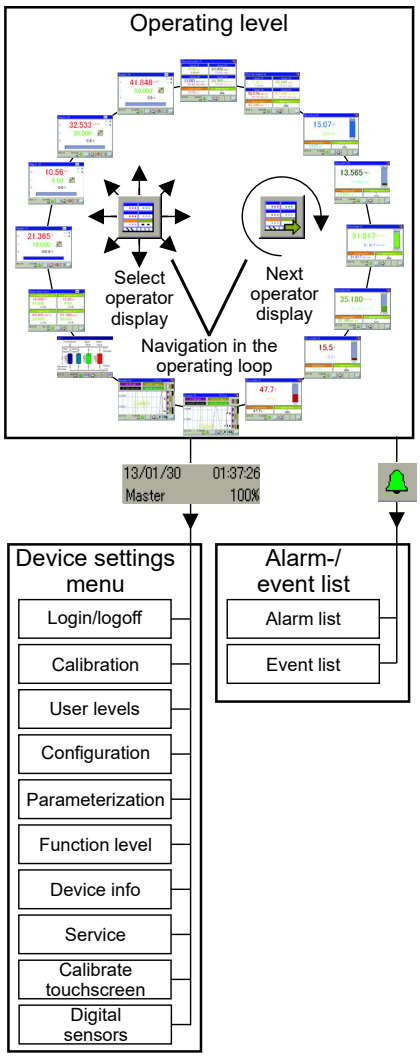
Operating concept

The REmult touch P is operated via the touchscreen. Measured values, operating states and diagrams of the individual functions are displayed and visualized on up to 16 operation screens. The device functions can be controlled using the buttons on the corresponding operation screens. Touching the navigation buttons selects the operator screen to be shown. The operation screens are arranged in an operating loop and can be run in a loop via the "Next operator screen" button and selected using the "Select operator screen" button. The "Device settings menu" button is for configuration and parameterization. A further menu for viewing pending alarms and an event protocol can be opened via the "Alarm/Event list" button.



User rights

The available operating and setting options depend on the user rights of the loggedin user. The device holds 4 user accounts.

- Master:
  Complete device configuration permitted
- Service:
  Access for authorized service personnel
- User1/User2:
  Restricted user rights

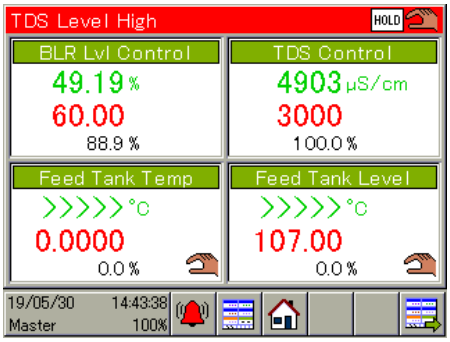
The scope of the user rights, as well as pass words and user names, can be edited via the PC setup program.

Operating loop/operation screens

The operating loop comprises 2 general screens and 6 detailed screens as standard. Further operation screens are created by configuring controllers and recording groups, thereby provisioning controller screens and diagrams in the operating loop. The individual operation screens can be configured for showing selected measured values or binary signals and for defining headings.

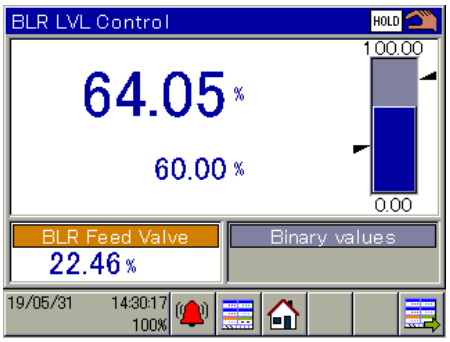
General screens

The general screens are pooled displays of measured values and binary signal states. For the analog measurements, 2-part screens, or 4-part screens can be configured for displaying 2 or 4 display fields, each with a main and a secondary measured value. One additional value and up to 3 binary values can also be displayed in each general screen. Headings of the display window and the display fields can be renamed. Input signals can be freely as signed to the display fields. One 4 part over view screen displays up to 9 analog and 3 binary signals.



Detailed screens

The detailed screens are largescale displays of a main measured value with a secondary measured value. One additional value and 3 binary signals can also be displayed. The main value is visualized by a bar graph. Limit values for alarm functions of the measurement input concerned are displayed by marks on the bar graph.



Data monitor

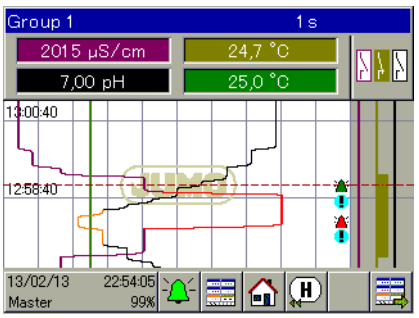
This function is included in the standard version. The data monitor displays measurement data as a line recorder diagram with time stamp. There are 2 groups available. For each activated group, a diagram is displayed in the operating loop as long as the group concerned is configured. 4 analog channels and 3 binary channels can be displayed per group. The measurement data are stored in a ring buffer. The oldest measurement data are overwritten to allow measurement data recording to continue when the ring buffer is full.

Recording function (Optional)

This function equates to a conventional paperless recorder and is available as an extra code. It corresponds essentially to an expanded data monitor function with the following additional options:

- Display measurement data history (scroll diagram)
- Data retrieval via USB flash drive or PCC software

The measurement data histories can be retrieved via PCC software or alternatively via USB flash drive and can be displayed, evaluated, and archived using the PCA3000 PC Evaluation Software.



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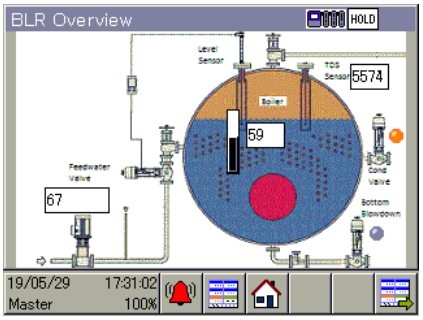
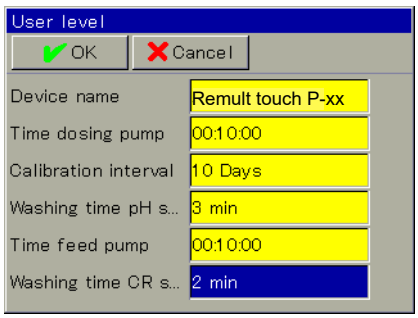
Process screen

The PC setup program is able to create a customer specific process screen in which a global overview of the plant process can be displayed. Once created, the process screen is transferred by the PC setup program to the REmult touch P, where it becomes a component of the operating loop. Up to 50 items (screens, digital displays, bar graphs, texts, etc.) can be used in the process screen. Typical for a process screen:



User levels

A user level is a menu which the user can access quickly and simply to define certain parameters and configuration settings. For each user level, a userdefined set of up to 50 settings can be selected using the PC setup program and saved there. Up to 16 user levels can be set up.

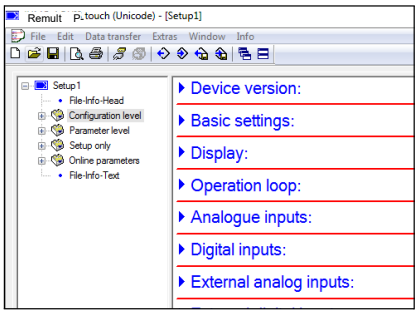


Functional level

The "Functional level" menu allows internal functions to be used and the status of these functions to be displayed. For example, counters can be reset or a wash operation started manually here.

PC setup program

The PC setup program enables the Remult touch P to be conveniently configured and parameterized using a PC. Data records can be created, edited, transmitted to the device and extracted in this way. The data can be saved and printed.



analysis inputs

Two expansion slots for analysis inputs can be flexibly equipped with optional boards for measuring e.g. and electrolytic conductivity (conductive/inductive). The conductivity measurement also covers TDS and ultra pure water applications within its performance range of services. A compensation for numerous influencing variables (e.g. temperature) can be configured. This makes the REmult touch P the central measuring point for all analysis measurands in one process. The diverse range of connectable electrodes and sensors enable all process relevant measurements to be recorded in a single device. In addition to anaysis measurements, these measurements include physical measurements, such as temperatureand flow, and also any measurement capable of being transferred as a pulse frequency signalor standard signal. Alarm functions ensure the monitoring of measured values for violation of upper and lower limit values.The limit values can be defined by the user.

Analog inputs

In addition to the standard temperature measuring inputs (Pt100, Pt1000, resistance transmitters/WFG, NTC etc.) and the universal input (0(4) to 20 mA) of the base unit, other analog inputs with optional boards can be made available. The optional analog inputs can be used for RTD temperature probes, resistance transmitters/WFG, voltage, and current signal. This makes the REmuit touch P an extremely flexible tool for measuring numerous values. Here, too, the user can configure alarm functions for monitoring measured values, for violation of upper and lower limit values.

Customer specific linearization

In addition to the standard sensor characteristic curves installed by the factory, customer specific linearization is available. Any arbitrary sensor characteristic curve can be input using this tool. Programming is carried out using the PC Setup program through a values table (up to 40 value pairs) or by inputting a 4th order polynomial.

Digital inputs

The signals from 3 standard and up to 6 optional binary inputs (potential free contacts and logic signals) can be used to trigger varibus internal functions, switchover of a parameter block or the start of autotuning, for example.
IN 2 and IN 3 enable the frequency of encoders to be measured to perform flow measurements using impeller sensors or monitor the rotational speed of pumps, for instance. There are 2 measuring ranges available, depending on how the measuring principle in the flow function is configured:

- 3 to 300 Hz (periodic time measurement)
- 300 Hz to 10 kHz (pulse counting)

External inputs

Bus technologies enable a further 8 analog and 8 digital inputs to be employed for signal transmission with bus users.

Analog outputs

The analog outputs are freely scalable (current, voltage). They can be used to output controller outputs, setpoint values, math results, and the analog input signals (e.g. actual value).
In addition to the standard analog output of the base unit, up to 4 more outputs can be provided with optional boards.

Binary outputs

Digital outputs are switching and logic outputs.
Digital outputs enable the output of alarms, limit value contacts, logic results and controller signals.
There are 2 standard binary outputs already available (OUT 1 to 2 relays). A maximum of 10 digital outputs can be realized in the device by means of optional boards.
The following variants are available as optional boards:

- 1-way output relay (changeover contact)
- 2-way output relay (normally open contact)
- 1-way output solid state relay triac
- 2-way output solid state relay PhotoMOS® (wearfree control, e.g. of dosing pumps)

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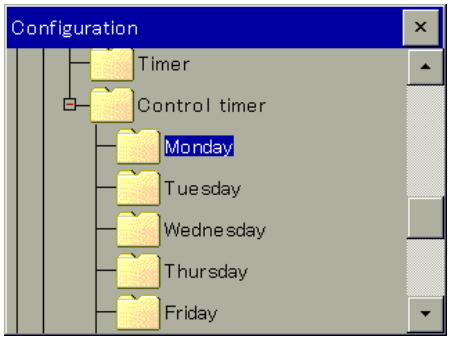
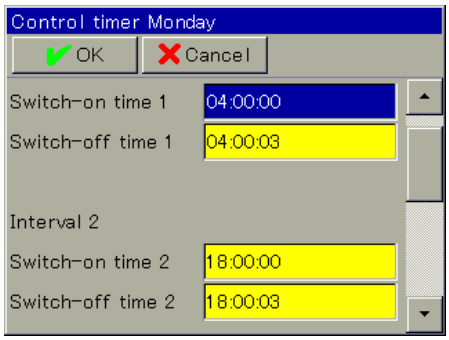
Timer

Twelve timer functions are included. They can be configured either as timers or time switches with a runtime. This function is used as daily bottom blowdown operation, with a settable length of bottom blowdown valve opening time.



Configured as a timer, the functions act like a time relay. The timer is controlled for starting, resetting, and stopping via binary signals. A timer can also be stopped, or its start delayed, by the tolerance band function. The tolerance band represents the deviation of a measured value from a predefined reference. If the configured deviation is exceeded, the timer concerned stops.



The chronological sequence of the timer signal can be influenced by the settings "Time", "Lead time" and "Stop time" in such a manner that a typical time relay functions (e.g. response delay or fallback delay) can be achieved.
The control timer function corresponds to a week timer. Up to 4 activation and deactivation times can be set for each weekday. When configured as a time switch with runtime, up to 4 switch on times and run times can be set.

Washtimer

Two washtimers are used for the regular cleaning of electrodes. Certain functions are initiated repeatedly at an interval that can be predetermined. For example, washtimers can control digital outputs for turning on a cleaning process in the system. As high a measurement certainty as possible should be guaranteed through regular cleaning of the sensors.

Calibration timer

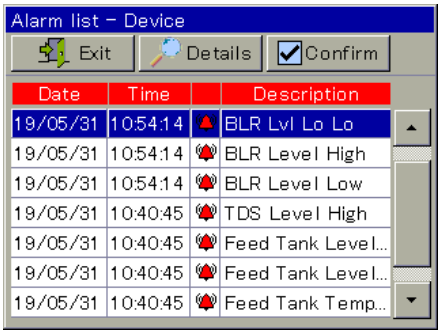
The calibration timer function regularly reminds the operator to recalibrate the sensors. Corresponding alarms and event list entries n be individually configured.

Calibration logbook

Analog inputs IN 6 to IN 12 are covered by a calibration logbook in which all successfully completed calibration processes are recorded along with the date, time, and numerous other details. An overview of the calibration history on the analysis sensors is therefore available at all times

Alarm/Event list

The alarm list reports currently pending errors. Possible alarm messages include calibration alarms or alarms triggered by input signals. Once the error sources are eliminated, alarms disappear automatically.
The event list stores and reports events, such as the appearance and disappearance of alarms, voltage supply failures, calibrations, etc. However, event list entries can also be configured in the functions of the REmult touch P.



USB interfaces

Host and Device interfaces are two different kinds of USB interfaces. A USB memory stick can be connected to the Host interface. This allows measurement data, Configuration data and service data to be stored. Also, memory stick configurations can be loaded into the device and device software updates can be car ried out. The Device interface, together a conventional USB cable, operates the PC set up program and fetches measurement data from the optional registration function using the PCC software. Both USB interfaces are located in the metal case barrel on top of the device.

Serial interfaces RS422/485

The REmult touch P has a standard RS485 interface which can be configured for the Modbus RTU protocol (slave) or for operating suitable digital sensors. A further interface (RS422/485) can be retrofitted as an optional board. Standard interfaces are used to incoporate the device into an automation network viz. Modbus protocol or for connecting a propriety digiLine bus with up to 6 digital sensors.

Digital sensors

One of the serial interfaces (either base unit or optional board) can be used upon activation of the extra code "Manufacturer digiLine protocol activated" (see order data) for operating digital sensors in a manufacturer digiLine bus system. Up to 6 sensors can be operated on a dig iLine bus. The manufactirer digiLine protocol supports both sensors with digiLine electronics and also digital sensors in the manufacturer's 2026xx product groups. Furthermore, the Ethernet interface allows t

PROFIBUS DP interface

The PROFIBUSDP interface can be used to integrate the REmult touch P into a fieldbus system operating according to the PROFIBUS DP standard. An application specific GSD file, via which the Remult touch P is integrated into the fieldbus system, is generated by means of the project engineer= ing tool supplied (GSD generator; GSD = basic device data).

Ethernet interface

The REmult touch P can be incorporat ed into a LAN using the optional Ethernet interface. This enables communication between the device and all PCs in the respective LAN.

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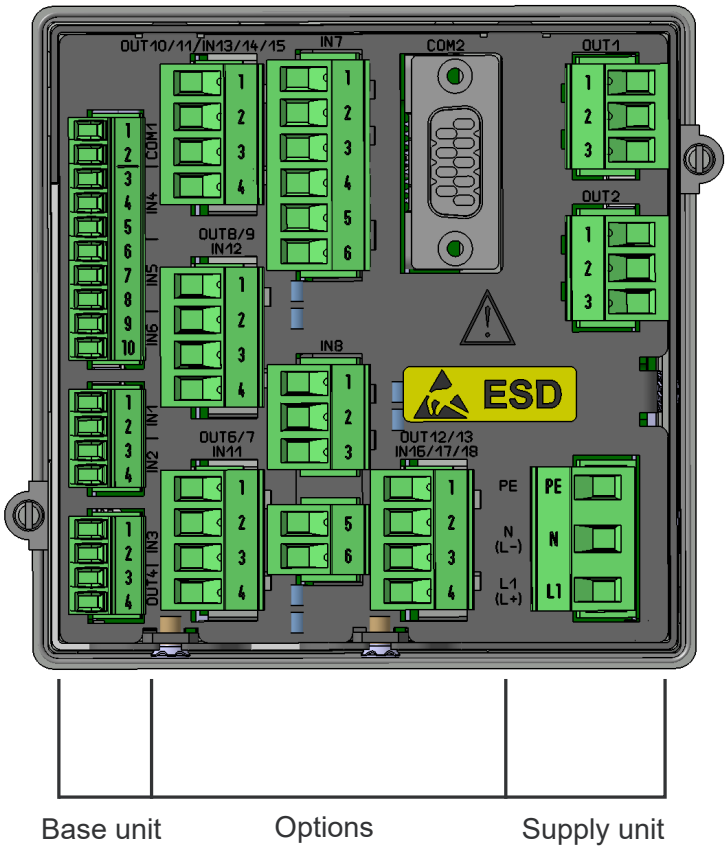
Overview of connections



	Assembly	Connector terminal	Type
Inputs	Base unit	PWR IN	Voltage supply for the device
		IN 1 to IN 3	Digital inputs
		IN 4 to IN 5	Temperature inputs
		IN 6	Universal input
	Optional boards	IN 7 to IN 8	analysis inputs –
		IN_9 to IN 10	Not available[a]
	Optional boards	IN 11 to IN 12	Universal inputs
		IN 13 to IN 18	Digital inputs
Outputs	Power supply unit	OUT 1 to OUT 2	Binary outputs (relay changer)
	-	OUT 3	Not available[a]
	Base unit	OUT 4	Analog output
	–	OUT 5	Not available[a]
	Optional boards	OUT 6 to OUT 13	Analog/digital outputs, OUT 8/9 also for voltage supply output DC ± 5 V, 24 V
Interfaces	Base unit	COM 1	RS485
		USB device interface	USB device interface
		USB host interface	USB host interface
	Optional boards	COM 2	Ethernet, PROFINET IO, PROFIBUS-DP or RS422/485

[a] Available only on the REmult touch P-3

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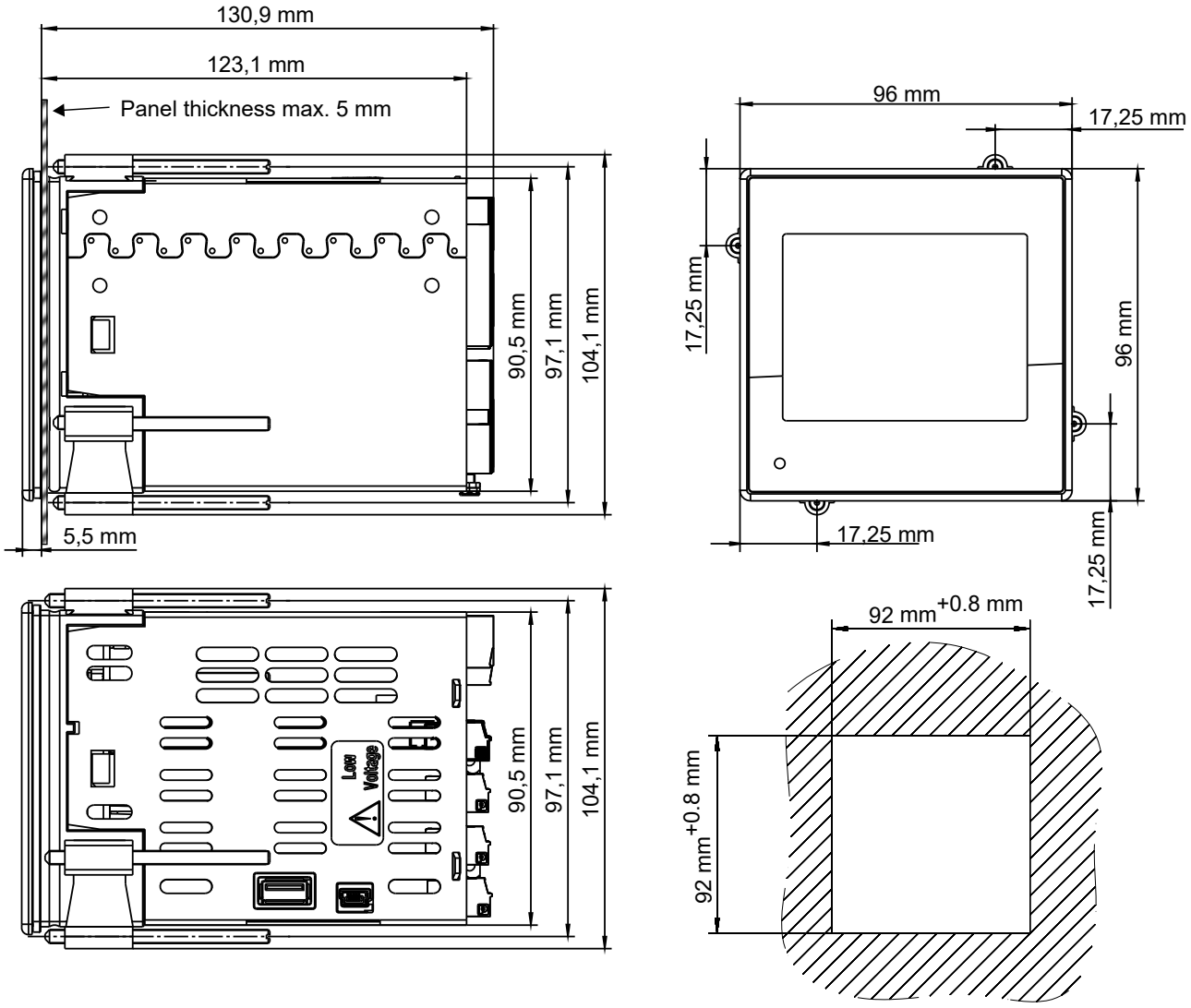
Dimensions



Distances

For sufficient ventilation, the following installation distances to adjacent resources must be adhered to:

- horizontal 35 mm
- vertical 80 mm

When inserting the device, sufficient space for maneuvering the connecting cables must be left behind the case.