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Inp. A1	mA	Inp. A4	°C
0.00		30	
0 0% 20		50 SPAL 85	
Inp. A2	mA	Inp. B1	m³/sec
0.00		300.00	
0 0% 20		0 1	
Inp. A3	mA	Inp. B2	m³/sec
0.00		0.00	
0 0% 20		0% 1	

TOUCH THE SCREEN TO SHOW NAVIGATION KEYS

1

Application 1: Automatic fruit juice composing system

Logical functions implemented in KOBOLD **Multi-Channel Datalogger** makes simple control procedures available. Depending on tanks level our device switches batch valves. After finishing whole sequence our controller switch the pump on. Those levels are seen on KBL screen. There is a possibility to implement some outputs as an alarm signals. There are simple controller and HMI unit collected in one single device. There is no need to create visualization application and control procedures separately.
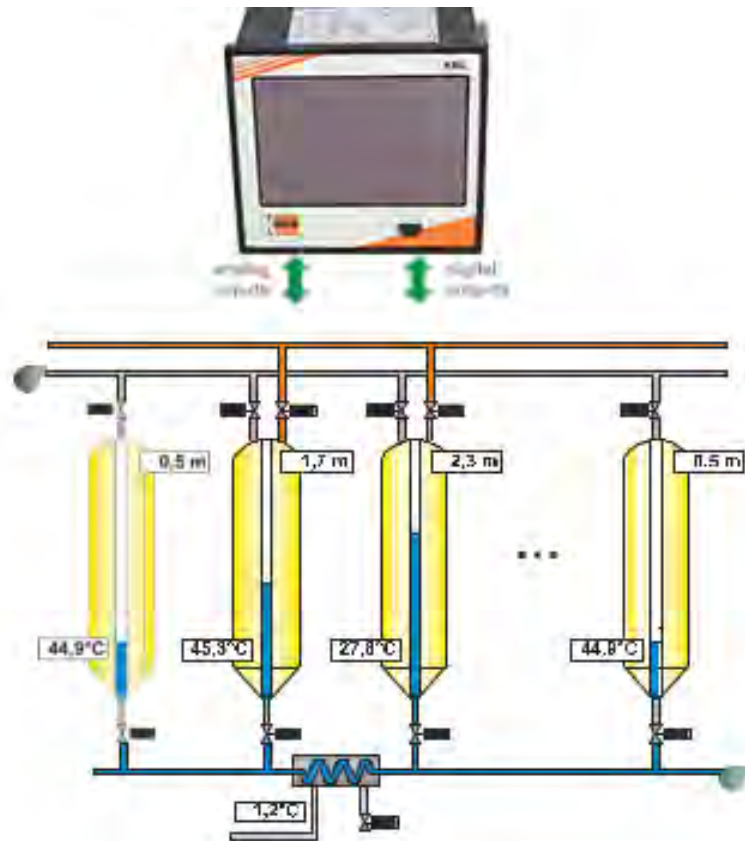
In this kind of industry application KBL-99 collects all analog measurements and sends them through Modbus RTU to main PLC. The distance between KBL-99 and a PLC installation can be up to 1000 m. All measurements are sent using one cable, this is a very cost effective method. Modbus RTU is very popular and reliable communication protocol. There is a possibility to divide Modbus network into several subnets. KBL-99 can work as a Master in one subnet and as a Slave in another.
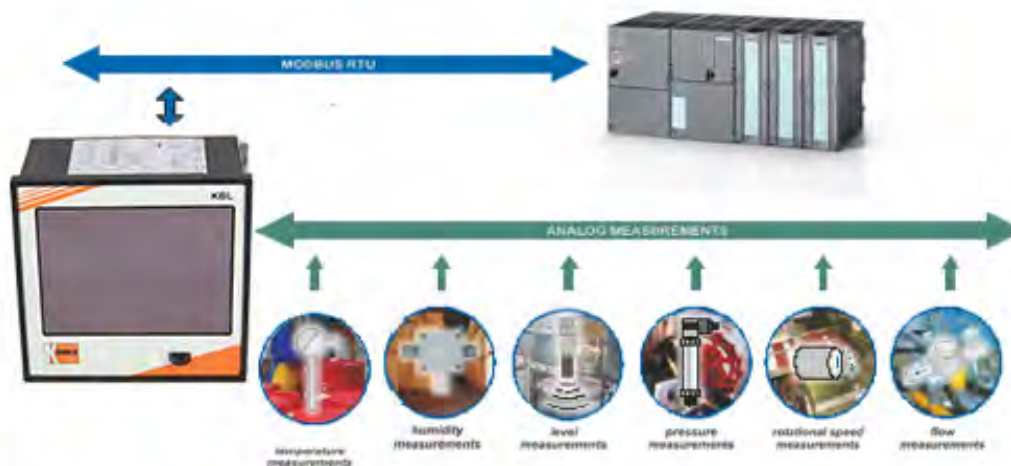
Application 3: Distracted application structures

Multi-Channel Datalogger collects all analog measurements using Modbus RTU protocol as a Master mode. All data are sent to another device (e.g. PLC) using one single cable. Today it is the most advisable communication method. It is very useful in distracted application structures.

Modbus RTU protocol can be used in explosive Atex zone as well. There is no need to extend system. All analog measurements are collected together and seen on KBL screen. Our Controller can be extended up to three Modbus RTU subnets. For example introduced above another subnet connects KBL with a PLC. PLC is a Master and the Multi-Channel Datalogger is a Slave.
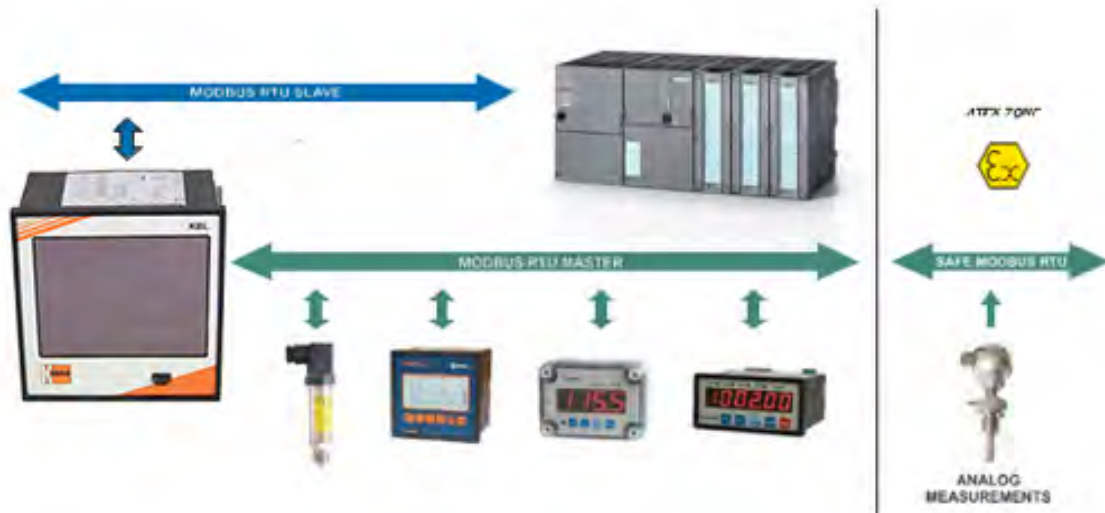
Application 4: Industrial automation trends

Nowadays industrial automation trends are going towards miniaturization and universalization. Outdated and unreliable systems like synoptic control boards can be now replaced with multi-purpose single devices. Today meters/controllers should be able to meet many customers' specific needs.

Multi-Channel Datalogger is an ideal solution for applications where simultaneous measurement and regulation of numerous channels are required. All control functions are collected in one single device. KBL is equipped with colour TFT touch screen that makes HMI simple applications possible. It is a very time saving facilitation. Plenty of screen types allow to visualize different measurements very clearly.

Even complicated automation process can be implemented in **Multi-Channel Datalogger** easily. Different types of inputs are joined with virtual channels. Using those channels and built in control methods KOBOLD **Multi-Channel Datalogger** covers almost every industrial automation process.
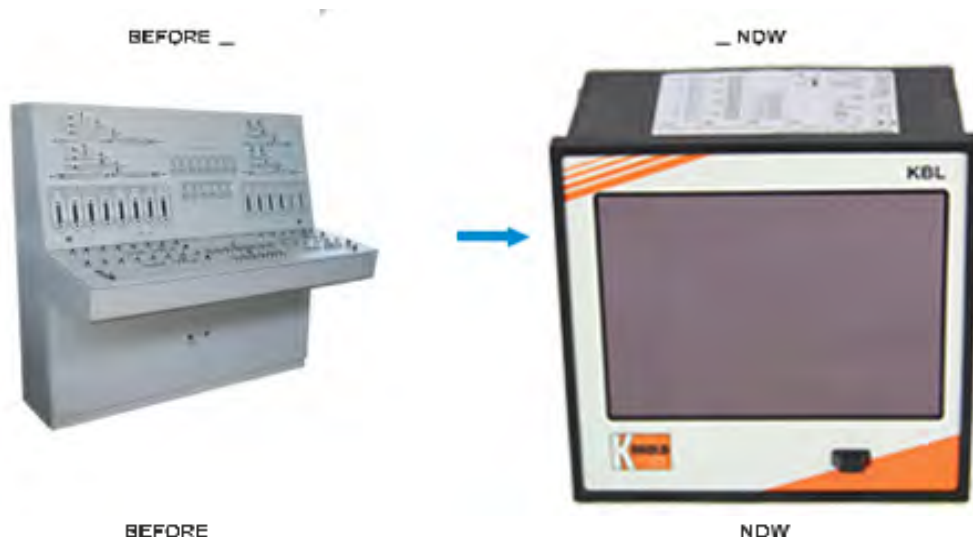
Application 5: Expanded mathematical functions

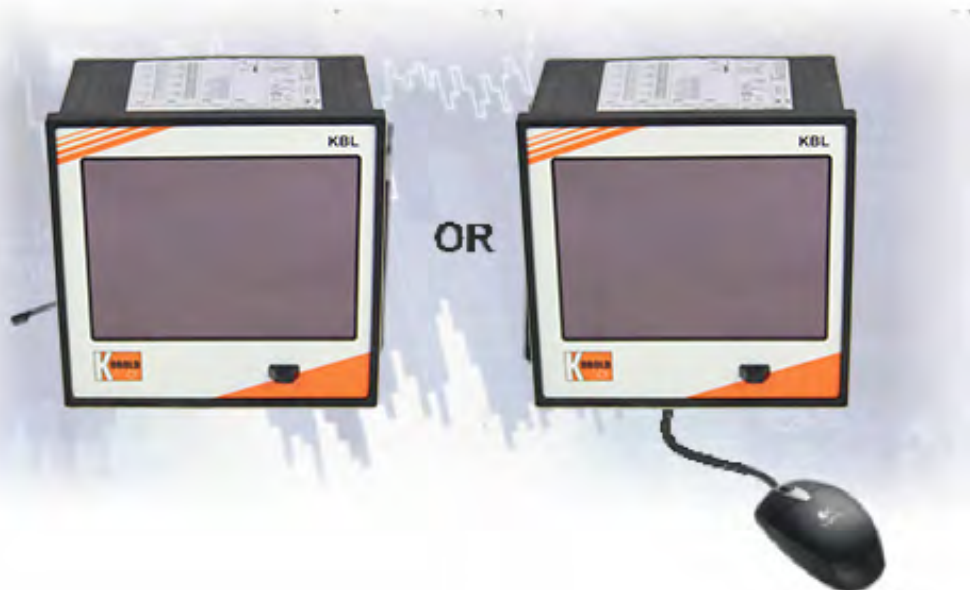**Multi-Channel Datalogger** controller allows to operate logical channels with mathematical functions. One can change every channel value using arithmetic operations. This possibility is very useful when KBL should work for example as a signal circuit analyzer for monitoring eg: power, power factors and electric energy. Having only voltage and current as input channels, all mentioned values can be calculated using mathematical functions only. The result of arithmetic operation is also an input channel and it can be displayed on KBL-99 screen or connected with our controller's output. Using binary logic as arithmetic component **Multi-Channel Datalogger** gives you a great possibility to implement simple PLC industrial application control systems.
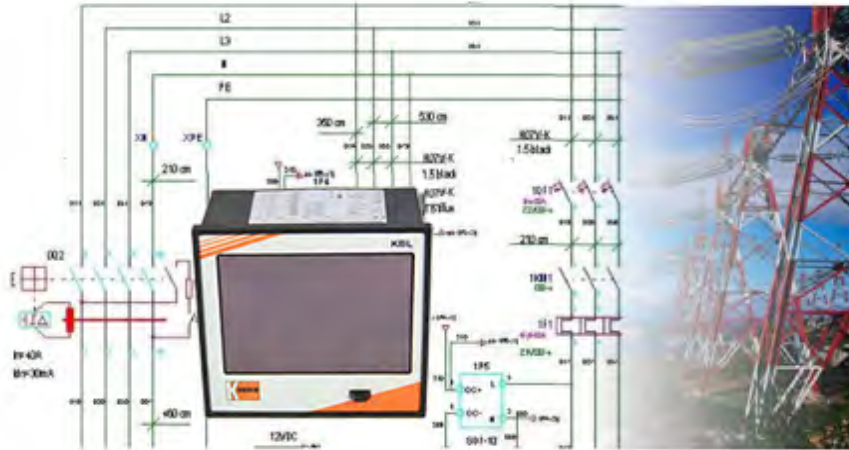
Application 6: User's simplification

KOBOLD **Multi-Channel Datalogger** controller has a lot of parameters and functions to set up. They make this device more versatile and they can cover our customers specific needs. Extended options, that KBL device has, can make set working process time-consuming. Luckily two USB Host ports are available. One can plug a PC mouse and keyboard to fasten configuration and programming process. Although each KBL is supplied with a scriber, an operator can also use a PC mouse for easy configuration, especially if one has to configure many KBL units at the same time.

Application 7: PID loop systems

Nowadays industrial automation trends are going towards advanced controlling systems. KOBOLD **Multi-Channel Datalogger** has up to 5 separate PID controllers. Even very enhanced industrial application can be supported with KBL device. It is obvious that PID loop applications are cost and energy effective control systems.
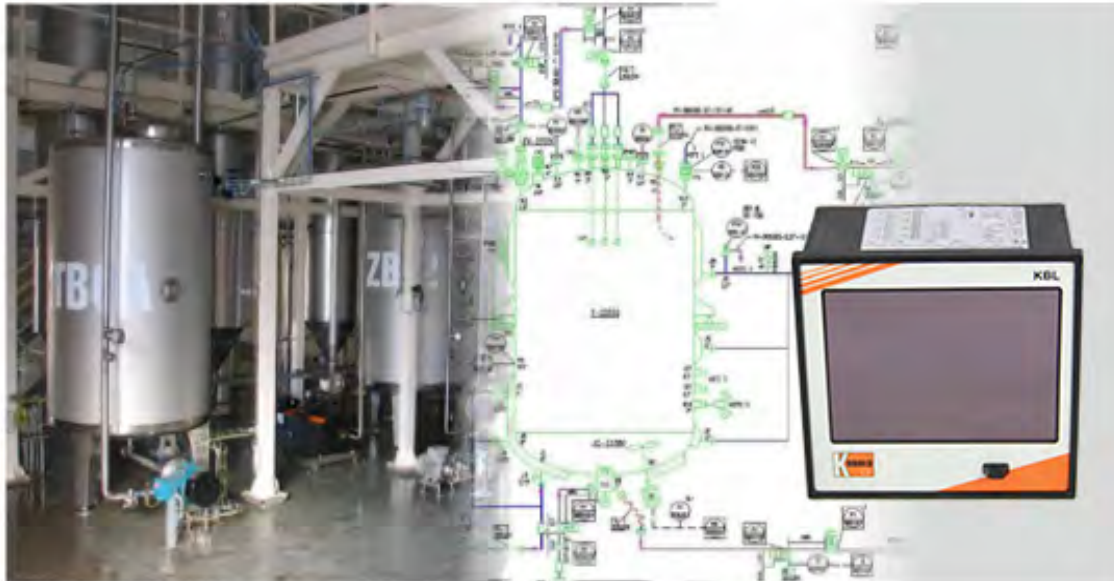
Application 8: Multi-Channel Datalogger KBL as a temperature meter

As a great example of KBL universal functionality is our latest successful story. **Multi-Channel Datalogger** KBL-99 collects measurements from 12 temperature points (KBL-141 from 18 temperature points) and sends them to the SimCorder software which logs them in a file. The customer uses one KBL only to view all the measurements at one place. Great facilitation is that our device has dedicated input slots for temperature sensors either resistance or thermocouple. There is no need to use additional devices like eg. external transmitters.

Application 9: High current relay outputs

A great amount of available controllers have built in relay outputs, but **Multi-Channel Datalogger** has high current relay output slots as an option. The KBL can be equipped with 4 Relays 5A or 6 Relays 5A current load modules. For example KBL having this relay output module in, can control heaters with 1200W load. Furthermore KBL users don't have to install contactors or indirect relays in their applications, which significantly can save space in electric cabinets. When contactors or indirect relays are necessary in any way, **Multi-Channel Datalogger** has 24V DC power supply excitation, in order to drive their coils.

Application 10: Fast SSR outputs

A great deal of industrial automation solutions needs fast durable outputs. **Multi-Channel Datalogger** is now ready to meet the requirement due to the SSR output available as another PCB module. Fast SSR output can be driven down to 0.1 sec time period. As an example, typical production lines require fast working controllers. KOBOLD **Multi-Channel Datalogger**, with its colour display and visualisation possibilities covers our customers needs perfectly.
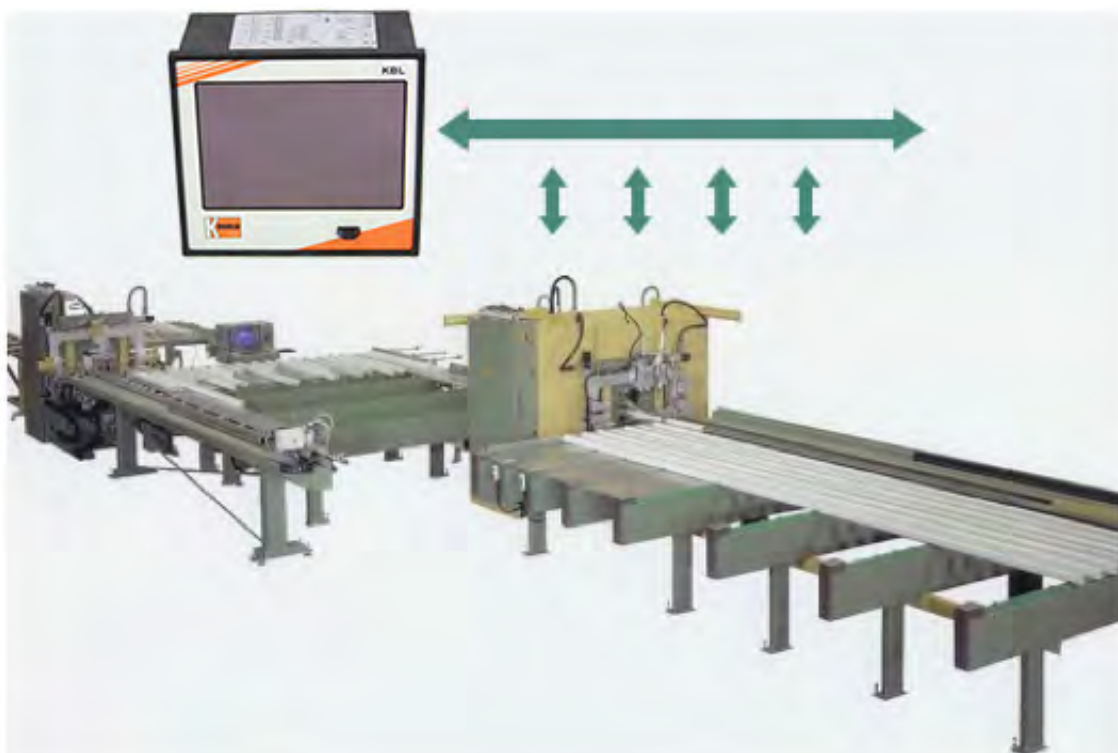
Application 11: KBL scatter application

Thanks to Advanced Communication Module (**ACM**) available as another slot in KBL, there is a great possibility to implement scatter applications using all KOBOLD and other devices equipped with RS-485 port. **Multi-Channel Datalogger's** Modbus RTU Master has many settings that make demanding and complicate applications possible to realize. Intermediate pumping stations scatter in wide distance is a good example of KBL universality. Options like Modbus Time-out are very useful for eg. GPRS communication.

Application 12: Auto configuration for KOBOLD devices in KBL Modbus RTU interface

Multi-Channel Datalogger Modbus Master communication options may not be obvious for non experienced maintenance engineers. We have made readymade settings for all KOBOLD devices equipped with RS-485. To set it up one just has to choose a device from the list in the KBL menu. There is no need to change any Modbus option. Communication will start and function automatically.

Application 13: KBL date and time controller

Many typical automation applications are time period. It is very unprofitable to make an investment with expensive PLC if control applications are relatively simple. The **Multi-Channel Datalogger**, thanks to implemented timer system, has a great possibility to control those systems alone. Using different input and output slots one can design as complicated automation systems as PLC, but inexpensively. As an example, gardening industry needs controllers with date and time functions.

Application 14: Precise analog outputs as a new KBL slot

Thanks to available Analog output module, there is a great possibility to control industrial applications using continuous analog signals. There are 4096 divisions available. Using profiles function one can compose even very complicated controlling. Chemical and pharmaceutical applications that need complicated composing systems are easy to implement with KBL.

Application 15: Multi-Channel Datalogger KBL the scatter controller

Taking into consideration actual industrial trends, we are pleased to introduce the **Multi-Channel Datalogger** as a scatter controller. There is a KOBOLD family of digital I/O, counter and analog input external modules, implemented in a small housing, that are easy to built inside control boxes. A single cable connection with RS-485 as a Modbus RTU makes applications economical and noise robust. The KBL can be used as the net Master that works out outputs using information collected from different inputs. Scatter solutions are very common when industrial applications occupy a lot of space.

Application 16: TS-35 DIN rail holders

Sometimes there is a necessity to build **Multi-Channel Datalogger** inside a control box. Using a common TS-35 DIN rail and new, optional **Multi-Channel Datalogger** DIN rail holders, the controller is easy to assemble in such applications. This way of installation is very helpful if access to this device has to be protected against unauthorized personnel or high IP protection is required.
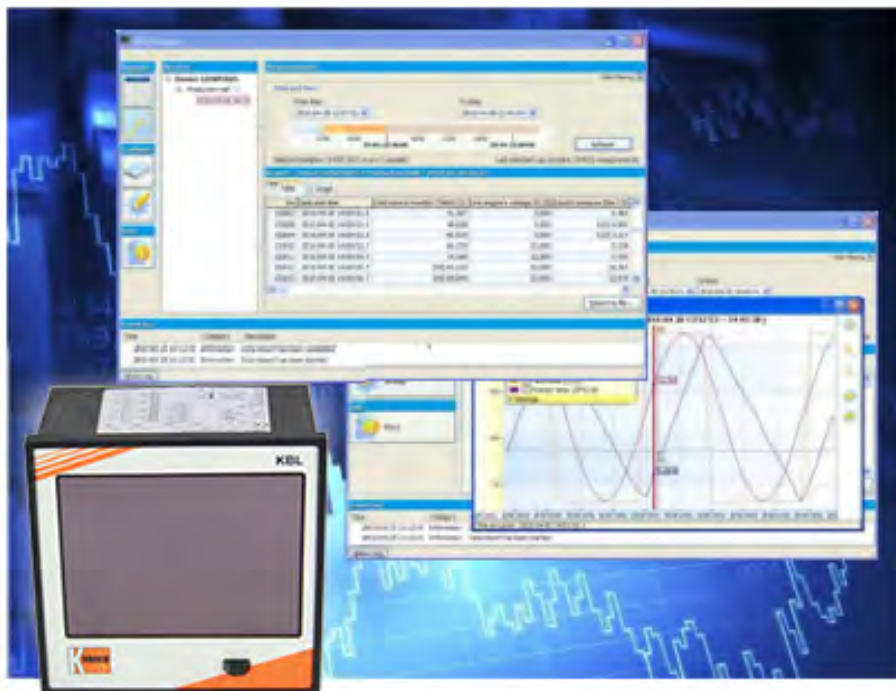
Application 17: Multi-Channel Datalogger screen using web browser

Multi-Channel Datalogger is well known as a universal meter and data logger. The unit is capable to collect different type of measurements coming to the input modules or transmitted via Modbus RTU port. Now, thanks to the Ethernet port build-in optionally, KBL gets a new functionality - display channels can be selected and viewed using typical web browser. The device can have a static or dynamic IP address (DHCP mode) which enables you to introduce KBL to a corporate network.
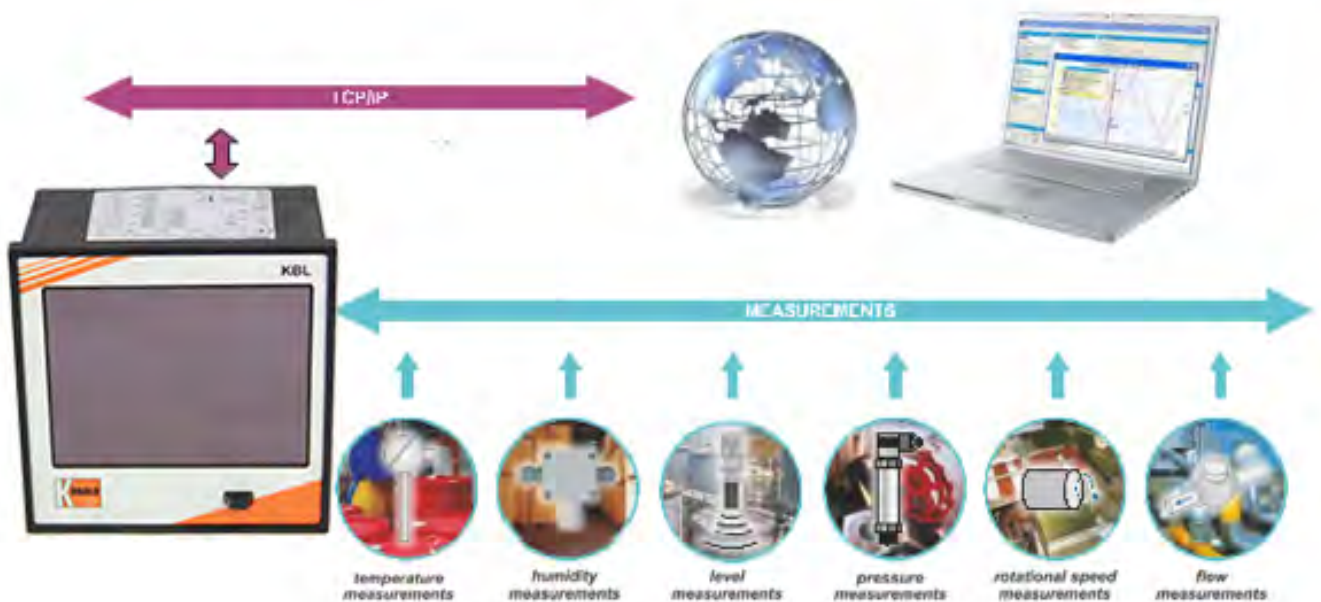
Application 18: Multi-Channel Datalogger data logger

Taking into consideration current industrial trends, there is usually a requirement to control actuators and log data using a one single device. In this case KBL is the right choice. Using the software license key a customer can activate data logging functions. Recorded data can be moved to the DAQ Manager PC software with a USB flash drive. The DAQ Manager allows to analyze recorded measurements using tables or graphs. Data can even be exported as a file for use in other customer programs for further analysis.

Application 19: Easy "setpoint" access

It is very convenient, for users, to change „Setpoint" values in each regulator easily. In the **Multi-Channel Datalogger** one has just to touch a chosen logic channel on the unit screen and hold for at least one second. There is no need to struggle with all settings in the Menu mode. Setpoint value can be mathematical function or picked profile as well. It is very useful in a heating characteristic procedure eg.

Application 20: Time profiles at industrial applications

There are many industrial objects that are time period determined. Everyday controlling cycle depends on day time. Good examples for those applications are typical pumping stations or chicken farms. The **Multi-Channel Datalogger** has built in, time control functions that are suitable for common time cycle applications. Using other KBL's functions, one can build quite sophisticated controlling procedures.

Application 21: New pulse, flow and tacho inputs

A great number of industrial applications are built using a wide range of proximity switches, which are mostly driven with fast digital inputs, like pulse counter inputs. These signals give some pieces of information about position, speed, flow, etc. The Multi-Channel Datalogger I/O modules list has now been extended with the following:

CP4 - 4 universal pulse counters
FT4 - 4 tachometer/flow inputs with totalizer counters and 4 analog current inputs extra
FI4 - 4 flow inputs as analog current inputs with totalizer counters and 4 analog current inputs extra.

Application 22: Technical manual available inside Multi-Channel Datalogger memory

In order to make the configuration easier, we have decided to keep the **Multi-Channel Datalogger** operating manual inside the KBL memory. One can download manual using a USB memory stick, if there is a need. This functionality helps to keep all required documentation close to device.

Application 23: Modbus TCP opens up great opportunities

The **Multi-Channel Datalogger** has implemented Modbus TCP server version. Up to 3 clients can communicate with our device at the same time. It can be the KBL's web page, the DAQ Manager PC software or a dedicated SCADA software. Nowadays ethernet/internet is the most popular communication medium. The **Multi-Channel Datalogger's** functionality with Modbus TCP offers now many new possibilities in the industry monitoring and control applications.

Application 24: Cost-effecitve SCADA solution

It is obvious that more sophisticated applications require complex Human Machine Interfaces. Multipurpose SCADA systems are quite expensive solution. Our proposal is to build your own HTML Web pages. All measurements are than available through Java script Modbus TCP library. There are plenty of applications that support html programming and they are free of charge. The HTML language allows to design even quite sophisticated and demanding applications.
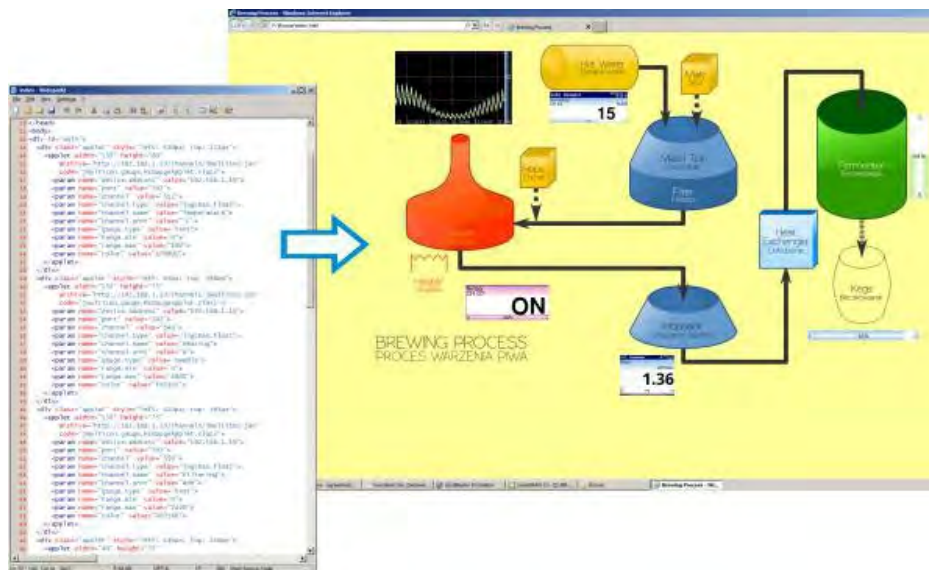
Application 25: Hourmeter modules

The **HM2** and **HM4** are the hour meters modules developed for the **Multi-Channel Datalogger KBL** units. Allow to measure period of time between START and STOP signals, as well as sum of periods. These modules are ideal solution to control working time of a machinery, duration of phenomena or for maintenance purposes. The **HM2** and **HM4** have 2 and 4 independent counters respectively. Each counter is equipped with 2 inputs - START/STOP and programmable, which can be set as asynchronous RESET, HOLD or used as independent digital input.

Application 26: Time format

Time format is an advanced method of data presentation in format of time. User can easily get a desired format, by entering a "formatting string" composed of letters and colons, for example a string: "w:d:hh:mm" lets user to display data as number of weeks, days, hours and minutes, separated by colons. This mechanism allows also for dividing the result on two independent channels. Input data must be expressed in seconds. The maximum displaying precision is 1/1000 of a second.

Application 27: Multi-Channel Datalogger as a modern compass rose

Multi-Channel Datalogger features 1.5 GB of memory enabling to save up to 125,000,000 samples, and offers the possibility of remote access. Thus, it can be successfully used as a service-free recorder of climate data. The mode of displaying values as phasor diagrams makes it possible to visualise the data collected from a weather station in the form of a classic compass rose.

Application 28: Flow measurement modules

As a universal controller and recorder, **Multi-Channel Datalogger** can cooperate with impulse flow meters as well as flow meters equipped with a current output. Apart from the instantaneous value, the total flow of liquid, gas or powder is calculated on a separate channel thanks to the totalizer function. The high load relay output modules as well as precise analogue outputs with the resolution of 4096 segments make Multi-Channel Datalogger KBL an ideal solution for the demanding processes of flow capacity regulation.

Application 29: MultiLevel Access

With an effort to meet the requirements of the most difficult industrial automation applications, we have equipped the **Multi-Channel Datalogger** controllers with a new feature. The "**MultiLevel Access**" mode makes the **Multi-Channel Datalogger** even more universal. You can define up to 16 independent users including the administrator who is the only user with a permission to freely configure the device without any limitations. The administrator's role also consists in defining permissions for other users. Only one user can be logged on at a given moment. The user is logged off after the lapse of time from the moment of the last interaction of the user with the device as specified by the administrator or upon express request of the user after clicking the padlock icon on the information bar. The authorisation process is additionally facilitated by the possibility of using USB keys. The hardware key allows the user to log on without the necessity of entering a password while removal of the key is equal to logging off. The key is assigned individually to each user. Such a facilitation will be available only for those users whose devices have Access Dongle license activated. Otherwise the login and logoff process must be carried out manually. The permission file may be saved using external memory and thus it is portable, which highly decreases the configuration time of subsequent units. The hardware key options are available with a **Multi-Channel Datalogger** device having Access Dongle license activated only.

Application 30: Extended operating temperature range of the Multi-Channel Datalogger

As an universal controller, the **Multi-Channel Datalogger** may operate in various conditions, such as in a closed control cabinet, at a production hall surrounded by heavy-duty equipment and even in the control units of seagoing vessels. In response to the requirements of the most demanding customers, Multi-Channel Datalogger KBL has met another challenge, i.e. low temperatures. We are proud to inform you that the version with an extended operating temperature range between -20°C and +50°C is now available.

Application 31: Multi-Channel Datalogger as a supportive element for small and medium-sized pumping stations

Owing to the broad and varied range of the available input/output modules, the **Multi-Channel Datalogger** is an ideal control unit for small and medium-sized pumping stations. On the basis of the signals supplied from the flow meters and the hydrostatic probes, the implemented mathematical functions make it possible to realize complex algorithms of the physical output control. The possibility of securing pumps against dry runs is an additional advantage.

Application 32: Multi-Channel Datalogger in a portable case

Multi-Channel Datalogger enclosed in a PELI case is dedicated to especially difficult applications in industrial automation where there is no possibility of safe installation of a recorder/controller. The cases are made of highly impact resistant polyp ropylene copolymer, ABS and stainless steel and meet the most demanding safety standards. The increase of safety does not mean that Multi-Channel Datalogger is less functional. It is possible to supply as many as 20 multipin connectors for sensors and external interfaces.

Application 33: Multi-Channel Datalogger as a remote controller

Apart from remote data insight via a web browser or the DAQ Manager software, **Multi-Channel Datalogger** also enables direct process controlling from almost anywhere in the world. Using the Modbus TCP/IP protocol implemented in Multi-Channel Datalogger KBL as well as the remote display functionality, the user can easily transfer the display of the device onto their computer screen. Connecting **Multi-Channel Datalogger** to a router with properly routed ports enables full control of the application from home, office or even a hotel room.

Application 34: Heating

The availability of multiple I/O modules enables to adapt the **Multi-Channel Datalogger** to a variety of applications. It is a perfect solution for any heating processes. Multi-Channel Datalogger can cooperate with thermocouples as well as RTDs. The relay outputs, a quick-connect SSR output and analogue outputs enable to realize simple algorithms of threshold control as well as complex PID control algorithms. The highly user friendly and intuitive interface allows to create appropriate heating profiles.

Application 35: Remote support

Using an Ethernet connection and the "Remote Display" feature, nearly any user of the **Multi-Channel Datalogger** has the possibility of receiving remote support regardless of their location. All it takes is a connection of the Multi-Channel Datalogger to a router with properly routed ports. Our engineers will be happy to assist in configuring the device. Furthermore, every user has the ability to save any configuration, which they may send to us for diagnostic and possible correction purposes.

Application 36: Dosing

Multi-Channel Datalogger supports various modules of measuring inputs as well as relay and analogue outputs. Owing to the above, the device has nearly unlimited possibilities. Any types of dosing functions can be a great example of this. **Multi-Channel Datalogger** equipped with flow meter inputs as well as relay outputs mentioned above can become a smart dispenser. It measures the existing flow values with unusual ease as well as calculates the balance of the medium and distributes it.

Application 37: Multi-Channel Datalogger as an energy meter

Multi-Channel Datalogger efficiency has been proven in various industry applications. In some branches, measurement of energy consumption is highly important. There is no need to invest in additional meters - that is where our multichannel controller/recorder comes in handy. Thanks to the transmitters available in our offer, you can easily change the voltage and current into standard automation signals. **Multi-Channel Datalogger** can use a number of the built-in mathematical functions to easily calculate the balance and the existing energy consumption.
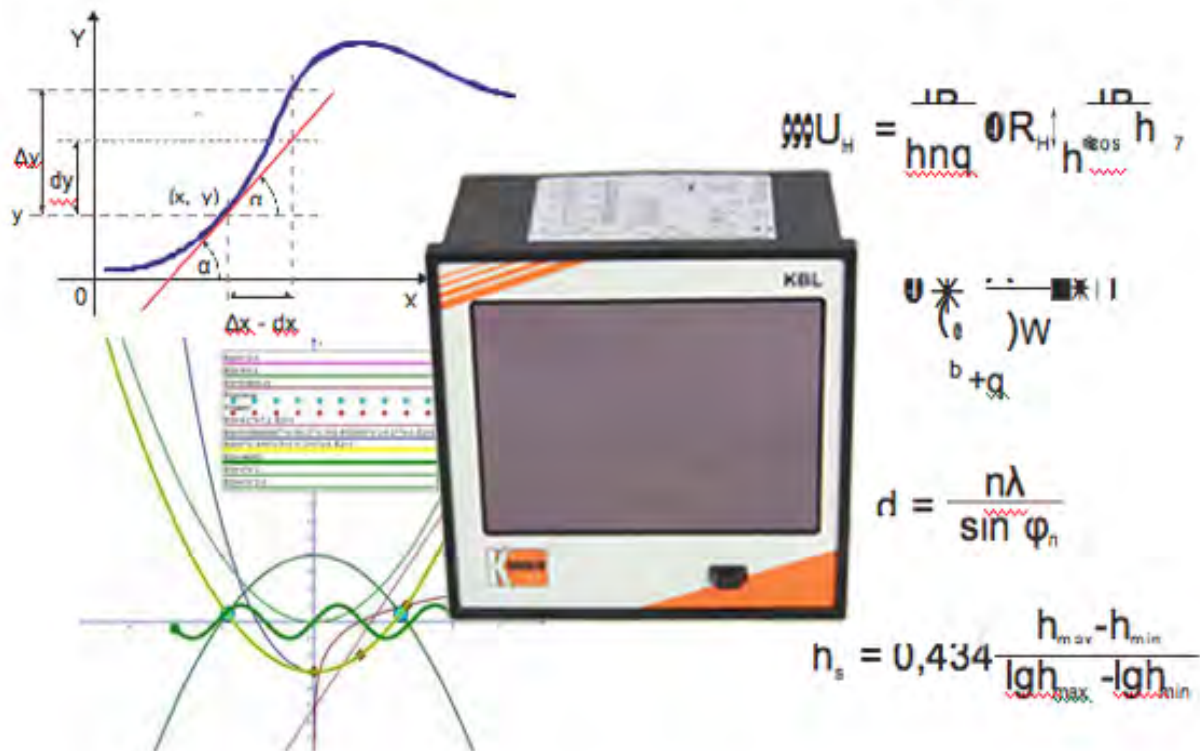
Application 38: Multi-Channel Datalogger - Trend diagrams

Multi-Channel Datalogger supports both the dynamic processes as well as the slowly varying processes. Especially in case of the latter, the trend diagram function becomes very useful. The user is granted with the possibility of presenting the process/processes on the screen lasting for a period of up to 1 week.
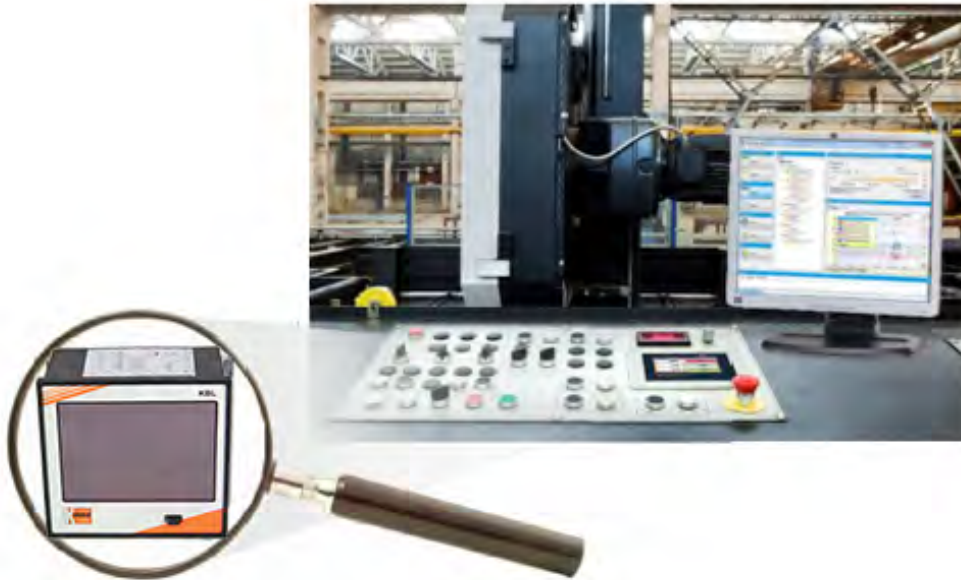

Application 39: Multi-Channel Datalogger - Improved mathematical functions

Implementing new mathematical functions such as: derivative, integral, count pulses, flip flop and average, extends the wide scope of possibilities of the **Multi-Channel Datalogger** and also significantly decreases the number of the logical channels involved, which makes it possible to optimize complicated applications. Computing the power and acceleration, as well as balancing and averaging of measurement data is much more convenient.

Application 40: Production processes supporting

The broad range of I/O modules, expanded regulation features and 1.5 GB memory for simultaneous recording of 60 measuring channels make the **Multi-Channel Datalogger** an ideal solution in supporting production processes. Apart from measuring the non- electrical parameters which are key for production, such as temperature, pressure, flow, the Multi-Channel Datalogger also calculates details/cycles, records the machine operation time and assigns control signals on the basis of the data collected.

Application 41: Communication between devices

Installing an **ACM** communication module in the **Multi-Channel Datalogger** provides a number of possibilities. The three isolated RS-485 interfaces enable easy communication between the devices which also facilitates management of large applications. The fully correlated units may share such activities as: local displaying of the measured values and controlling the physical outputs at the other end of the network. Multi-Channel Datalogger which simultaneously carries the Master and Slave functions is an ideal base for creating expansive Modbus networks.

Application 42: Optoisolated counter input modules

Among the numerous I/O modules, the optoisolated meter input modules are specifically worth mentioning. **Multi-Channel Datalogger** equipped with a **CP2/CP4** module is compatible with proximity sensors as well as incremental encoders. The device equipped with a meter input module and relay inputs is perfect for such applications as: counting the current quantities of produced components, calculating the production cycles, measuring length or balancing production with control of the drive mechanism of the production line.

Application 43: Multi-Channel Datalogger as a multichannel converter

Multi-Channel Datalogger as a multifunctional device offers features of a multichannel meter, regulator and recorder. Owing to the implemented RTU Modbus as well as the possibility of equipping this device with three RS-485 interfaces, KBL is ideal as a converter. The device converts Modbus digital signal into analogue signal and vice versa without any problems. A huge competitive advantage of the Multi-Channel Datalogger used as a converter is the possibility of displaying all transmitted signals on a large colour display.

Application 44: Automatic change-of-view

Multi-Channel Datalogger provides 90 logical channels - displaying such a large number of variables is a huge challenge. This is where the automatic change-of-view feature is helpful. The user may precisely determine the list of views, change timeout, source of change activation and display time. The following display modes are also available: numeric values, line charts and phasor diagrams, vertical and horizontal bargraphs as well as an analogue meter mode.

Application 45: New mathematical functions in the Multi-Channel Datalogger

Apart from the basic arithmetic and trigonometric functions (sum, product, sine or involution) and logical functions, we have introduced advanced functions such as: derivative and integral. An example of applying an integral is displaying the total value of flow using a standard module of current inputs. This is a solution for all users whose units were not equipped with dedicated **FT/FI** flow measuring modules and balancing of flow is necessary.
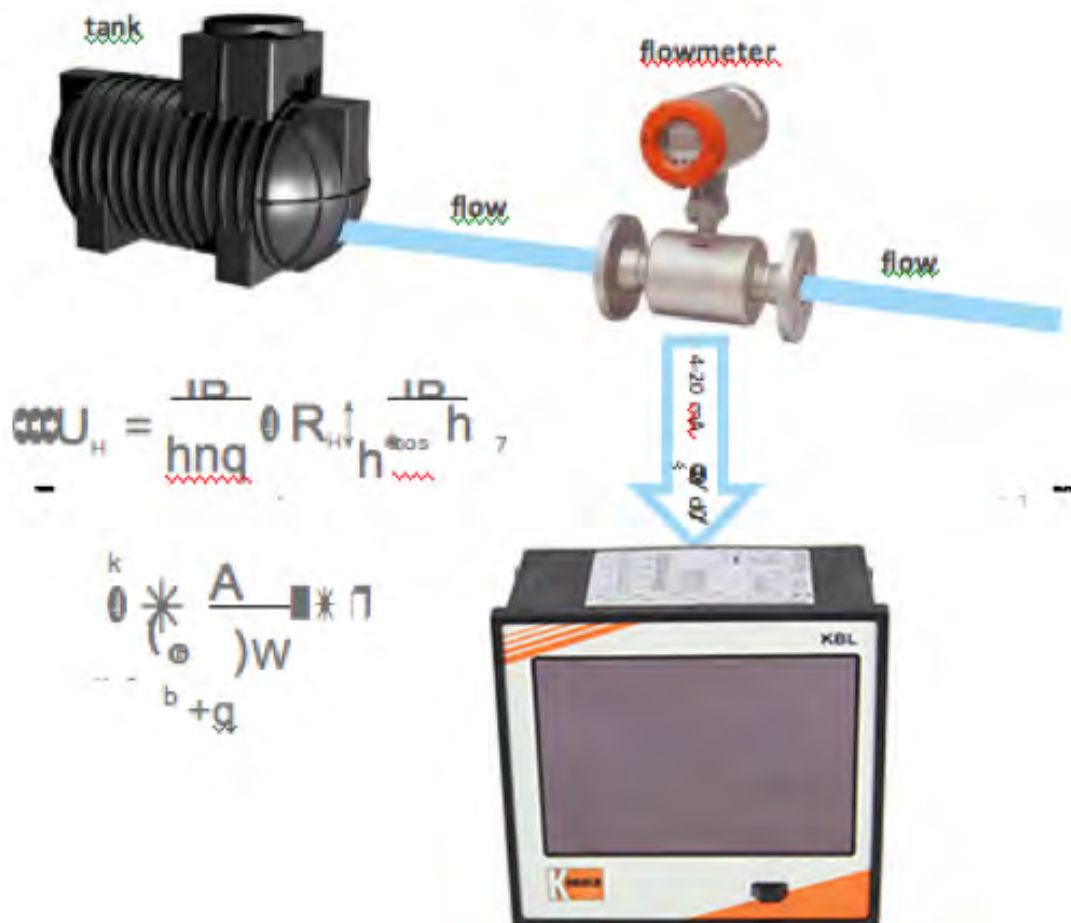
Application 46: Mixed modules

In order to increase the number of satisfied users of the **Multi-Channel Datalogger** recorders, we are gradually expanding the I/O module range. Mixed **UIN/UID** modules (analogue-NTC or analogue-digital) has 16 or 24 inputs which allows to measure current, voltage and temperature (using NTC sensors) and can be equipped with non-isolated digital inputs.

Available modules:

- **UI4N8** - 4 x voltage inputs + 4 x current inputs + 8 x NTC inputs
- **UI4D8** - 4 x voltage inputs + 4 x current inputs + 8 x digital inputs
- **UI8N8** - 8 x voltage inputs + 8 x current inputs + 8 x NTC inputs
- **UI8D8** - 8 x voltage inputs + 8 x current inputs + 8 x digital inputs

To make sensor connection easier, inputs are grouped and all ground terminals are common but separated from power supply and other modules.
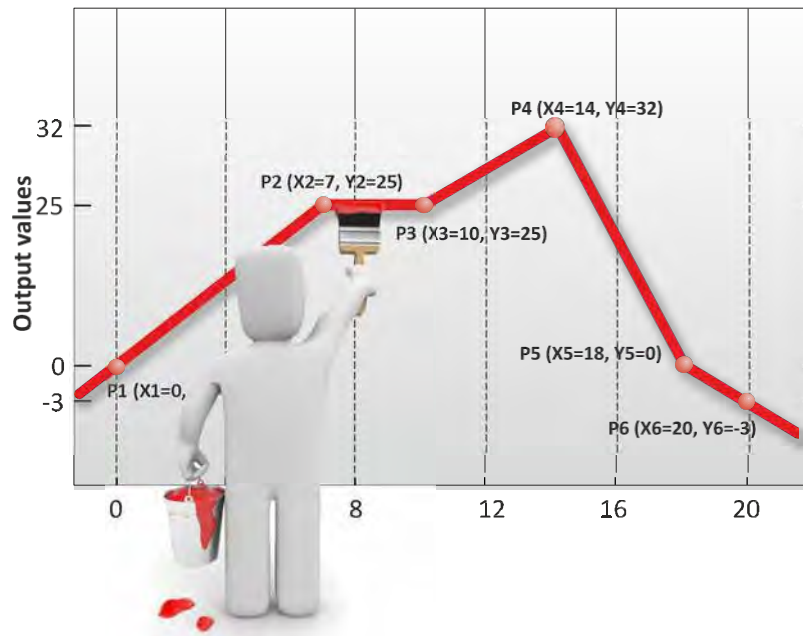

Application 47: Multi-Channel Datalogger in petrochemical industry

Multi-Channel Datalogger as a universal controller and recorder can be applied in many industry branches. One of the key industries is the petrochemical sector. Owing to the large number of various inputs/outputs, the **Multi-Channel Datalogger** may easily measure temperature, pressure and the media level in tanks simultaneously. It is equipped with flow measuring modules and enables to precisely determine the current flow rate, dose media to tanks and calculate the total flow value. Global access to the device is ensured through Ethernet which also makes it easier to download data. 1.5 GB of internal storage of the **Multi-Channel Datalogger** enables to store up to 125,000,000 samples.

Application 48: User characteristic

In order to meet the requirements of the most demanding applications, the **Multi-Channel Datalogger** enables the user to freely process input signals. Apart from the classic smoothing filters, peak detection filters or line scaling filters, the user characteristic feature is very helpful. This feature is defined in the form of **19** straight-line sections and enables to simultaneously slide, linearize and smoothen out the input signal. Such freedom in processing the input values highly facilitates creation of even the most complex control algorithms.

Application 49: Relay outputs

The versatility of the **Multi-Channel Datalogger** recorders is not merely based on the exceptionally large range of input modules. Realization of complex control algorithms is also of key importance. Output relays with load capacity of up to 5A are fully programmable. They can work in 5 different modes including **PWM** (for SSR outputs). Apart from the trigger source, the thresholds and hysteresis, the user can also define the delays of the switching time, the minimum switching time as well as the method of reaction of the relay output in case of emergencies.
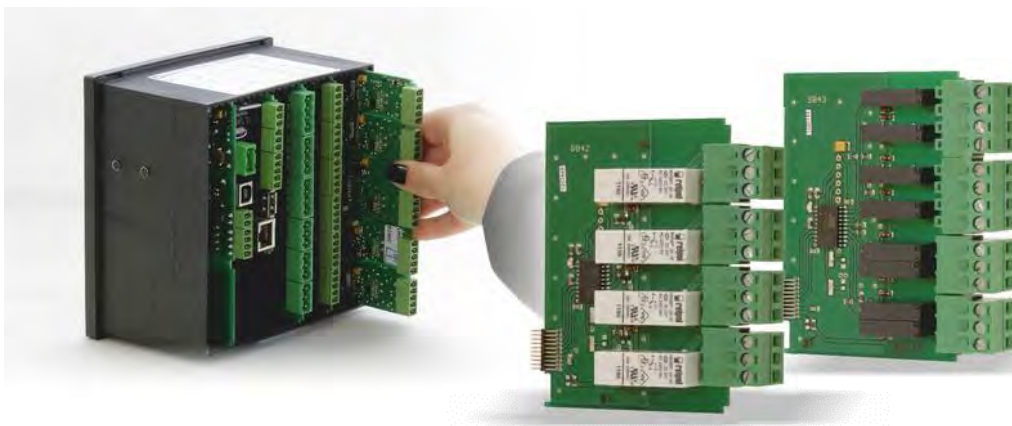
Application 50: Set value

Among the numerous modes in which a logic channel can operate, the set value mode is highly appreciated by the **Multi-Channel Datalogger** users. The value entered can be either a number or a binary code. The logical channel in the set value mode can also take the form of a button, optionally a mono- or bistable one. This functionality enables to implement complex control algorithms while management of the process of recording is a simple task.

## Application 51: Support for the industry of pharmaceuticals

The industry of pharmaceuticals is highly sensitive to the changes of environmental conditions. It is very important for the quality of production as well as employee safety to control temperature, humidity or pressure in particular production processes. Here's where the **Multi-Channel Datalogger** comes to assist you. It is capable of measuring any non-electric values while being an ideal dosing system, meter of cycles or an alarm unit. Any information about the collected signals can be stored in the internal 1.5 GB memory.

Application 52: New functionality: e-mail notifications!

In response to our Customers' demands, the **Multi-Channel Datalogger** series devices are now equipped with a brand new function: an "**E-mail notifications**" system. It enables sending e-mails directly from the **Multi-Channel Datalogger**, which makes the device even better adapted to high-tech alarm and monitoring systems. The user can define up to 32 different messages to be sent in case of any of the specified events. An e-mail message consists of three elements: topic and text of the message (both with fixed content) and an attachment containing momentary values from the selected groups of or individual measurement channels in the .csv format. Because **Multi-Channel Datalogger** supports secure logging (encrypted by TLS or SSL protocol), the account from which notifications are sent can be opened on any e-mail server.

*The "**E-mail notifications**" system functionality requires the license key.*
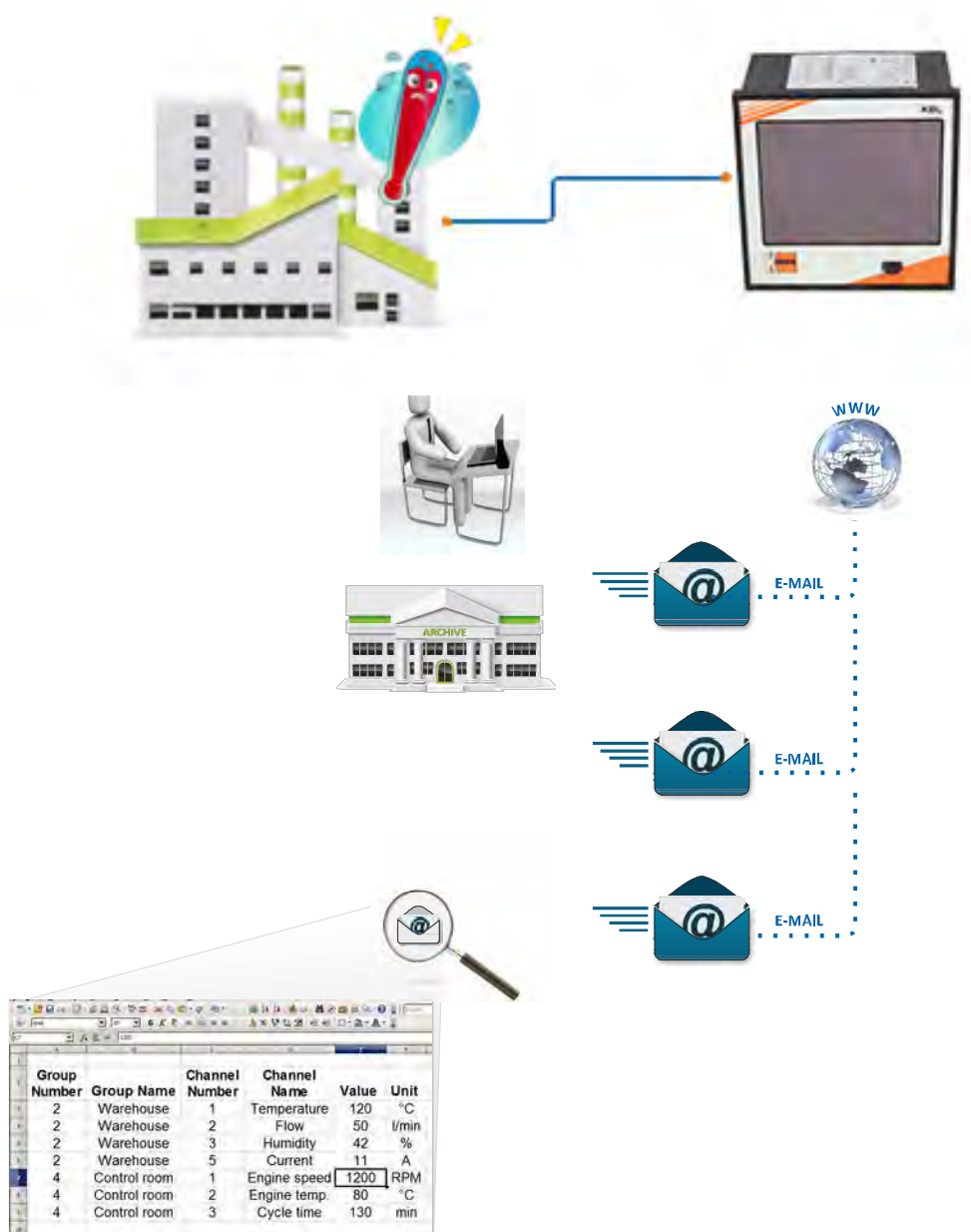
Application 53: Detecting changes in a monitored process (on the example of heating profile)

Recently added mathematic functions, e.g. derivatives or integrals, expanded the functionality of **Multi-Channel Datalogger**. Derivatives can be used for example in detecting changes in a measured process. Using derivatives as an incline of a measured value diagram, you can easily detect any changes within the process. Thanks to that, you can read any unwanted temperature decrease or the moment the temperature increase stops (e.g. the moment of furnace heating). Oftentimes, this is the signal to start some other process, to change the heating profile, or to simply register the time of the incident. Furthermore, the user can decide what level of change (rise/fall rate) should trigger a reaction from the controller.

Application 54: Multi-Channel Datalogger as a controller of proper use of combustion engines

From numerous applications where **Multi-Channel Datalogger** proved to be useful, one of the most interesting ones is the control of the work parameters in combustion engines, used as e.g. drive systems in vehicles and boats, or as redundant power generators. Thanks to its universal design, **Multi-Channel Datalogger** can read various non-electric values, e.g. pressure, temperature, or the flow of work factors, as well as the rotational speed of a rotating object with no need for using additional converters. **Multi-Channel Datalogger** is password- protected and enables quick registration, which makes it an ideal monitoring device. Remote access allows the administrator to control proper engine work with no need for interference.

Application 55: Using a PC screen as a display

There are numerous ways in which users can remotely access their **Multi-Channel Datalogger** series devices. One of them is the ability to use the screen of your PC as a controller display. After configuring an admin password, the built-in webpage displays a hyperlink allowing you to redirect **Multi-Channel Datalogger's** screen to the earlier started Xming application on your PC. Thanks to that, operators have direct access to all functionalities of the device from any place.


Application 56: Synchronization with time server

Multi-Channel Datalogger devices are often used in applications where the primary requirement is to ensure highly precise process realization in real-time. Currently, **Multi-Channel Datalogger** does not require manual set up of time and date, and it features automatic synchronization. After installing the most up-to-date firmware and connecting the device to the Internet, you can enter an NTP (Network Time Protocol) server address. From now on, the device will automatically synchronize the time with the selected server. Thanks to that, **Multi-Channel Datalogger** always has the correct time and date set up, and all changes to DST are always applied.

Application 57: Conditional data recording in practice

One of the most popular **Multi-Channel Datalogger** functionalities is the data recording feature, where on the level of basic parameters you can define logical channels that are going to be recordered, as well as data recording frequency. It is also a good idea to take a look at the remaining data recording parameters provided by the device. One of them is conditional data recording. After selecting it, the user can decide which channel will trigger the data recording for a particular group of channels. Thanks to that, you can record particular parameters only in critical conditions, e.g. when a certain value exceeds a defined threshold. Another
example of the application of conditional data recording (along with time profile) is cyclic data recording, where you can e.g. record only the first minute of each hour.
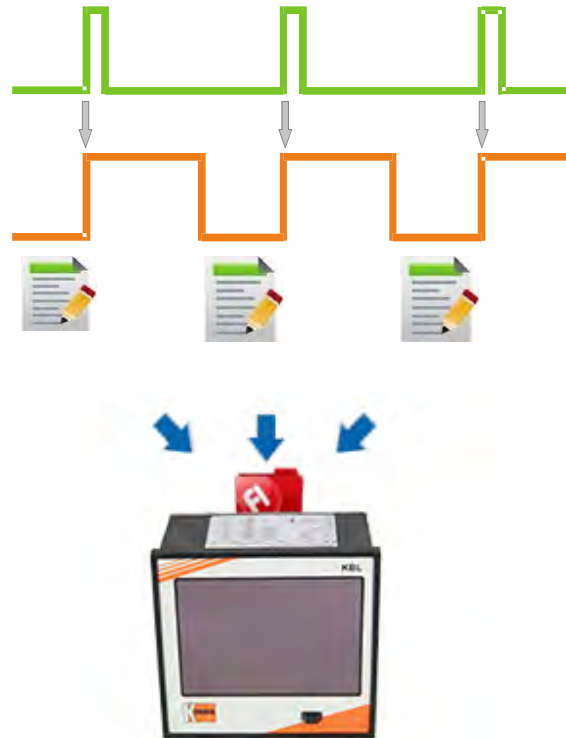

Application 58: Pulse inputs CP2/CP4 - additional functionalities

Multi-Channel Datalogger can be equipped with pulse counter inputs. A single card features 2 or 4 inputs, depending on the chosen module. Additionally, **Multi-Channel Datalogger** can communicate with external **SLI-8** module (equipped with 8 independent inputs). An interesting solution is to realize two balances using a single physical input. For instance, you can count all pulses received by the device using one logical channel, while counting the pulses during a particular day using the other channel. Such configuration provides users with functionality of two separate counters - a total counter and a daily counter, which can reset (automatically or manually) more often than the total counter.

Application 59: Indicated number of heating profiles

In numerous industrial sites **Multi-Channel Datalogger** is used for annealing process management. In such processes, the key is the rate of temperature increase/decrease, as well as the time the elements spend in target temperature-established state. However, there are systems in which the key is not the time, but the number of cycles. Because **Multi-Channel Datalogger** is such a flexible device, it can easily handle this type of tasks as well. In a user-friendly way, it allows you to set the number of cycles of your choice for a particular process, as well as the threshold value that will initiate the cycle count. After the specified number of cycles is reached, the device will inform the user via one of the communication channels (e.g. e-mail).
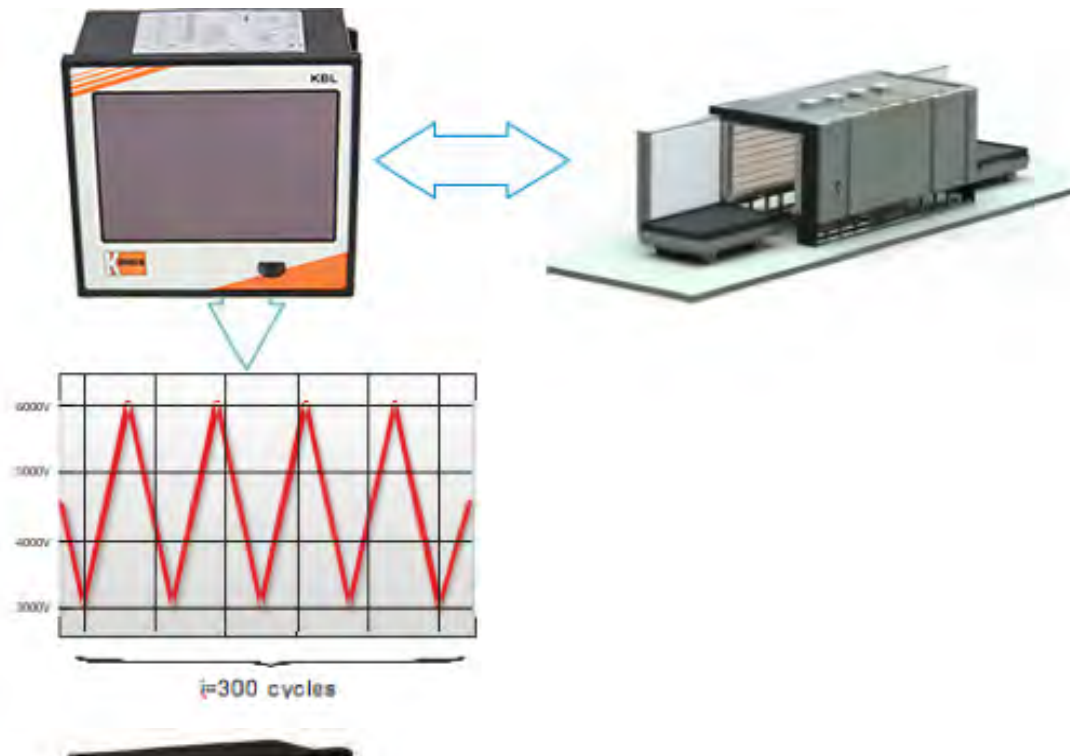
Application 60: Recording single element parameters

One of many ways to use conditional data recording is **recording single element parameters**. For instance, in print applications **Multi-Channel Datalogger** together with a slotted sensor or any other presence sensor can save in its own memory samples not only at an indicated frequency, but also every time an object occurs in the sensor zone. Thanks to that, when you connect **Multi-Channel Datalogger** with a label detecting sensor and an encoder, you can set up the device in a way to make it read the length of subsequent labels directly from the recording files.

Application 61: Multi-Channel Datalogger as a controlling device

Using the counter input (**CP2/CP4**) and the encoder connected with the measurement system of the production line, you can precisely define the amount of material used in production. Scalability allows you to view not only the length but also the grammage of the material (e.g. wire, steel, foil) directly on **Multi-Channel Datalogger**. You can set up scalability manually or it can be adjusted automatically. This way of using the device enables controlling the amount of manufactured product against the material used.

Application 62: Hardware output monitor

The logical channel in **Multi-Channel Datalogger** devices can be of various forms, one of which is the so-called "**Hardware output monitor**". Depending on the type of output, the device can display the signal in a binary (in 0/1 bit or descriptive form e.g. START, STOP etc.) or analogue (4÷20 mA scaled against engineering units) form. This functionality allows you to use the gathered data to create logical control structures or to run system diagnostics. Thanks to that, you do not need any external controls or meters to visualize output status of a **Multi-Channel Datalogger**.

Application 63: Multi-Channel Datalogger recorder with MultiPrint printer

Primary use of the **MultiPrint** series thermal printer is to automatically print instantaneous values of parameters measured by the device. After setting up the trigger of the **Multi-Channel Datalogger** regulator and defining logical channels and channel groups, the printer automatically prepares prints along with reports. The printing may occur at the time a particular event takes place, or at a time interval, e.g. an hour. It can also be started manually by the operator. You can create up to 8 independent report templates. Thanks to the use of the **Multi-Channel Datalogger** with the printer, after arriving to the location, an operator has a readymade report at his disposal.


Application 64: Enhanced WWW Server

Multi-Channel Datalogger features an enhanced *WWW server* that enables gaining access to numerous functions directly from a web browser. Such functionality enables e.g. previewing logical variable values, the amount of memory left for data storage, or set up parameters of the device. What is more, after signing in as an administrator, you will unlock additional features like: downloading and installing new device setup, Remote Display support that allows you to set up your device directly from you PC. Thanks to that, servicers can diagnose particular problems with an object or remotely re-program the device.

Application 65: Multi-Channel Datalogger as a programmable room temperature controller

Multi-Channel Datalogger is equipped with the known feature of time profiles that may serve as the temperature setting signals, used mainly to control the baking process. They may also be used for building applications. Time profiles may be triggered by various conditions or initiated at a set time of a given day of the week or month.
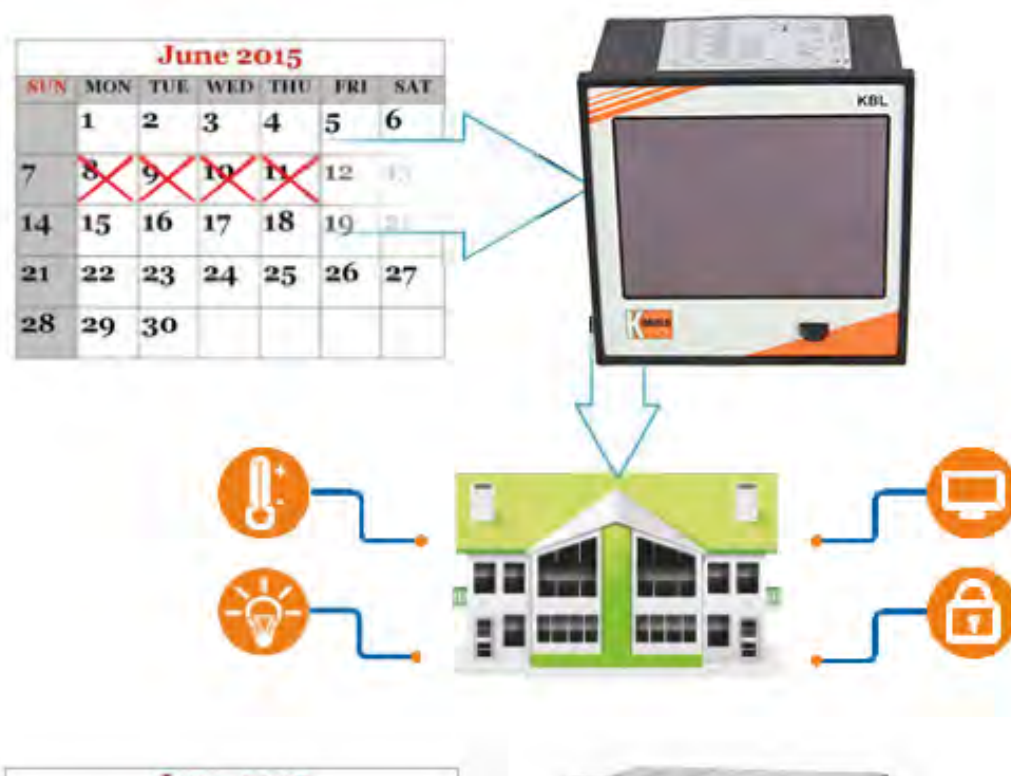
Application 66: Communication with the external SCADA system

Multi-Channel Datalogger may successfully serve as the main controller of an independent industrial process or co-operate with other systems. With the numerous communication ports, it may easily communicate with existing controllers. For example, **Multi-Channel Datalogger** may be connected through an RS-485/USB converter to a PC with SCADA (*Supervisory Control and Data Acquisition*) software installed. This type of connection supports duplex communication and the integration of **Multi-Channel Datalogger** with other automation systems implemented in the facility.