domat
CONTROL SYSTEM

NEWS LETTER

Summer 2020

Energy under control

Dear business friends,

The year 2020 did not start exactly according to our ideas. We hope that the whole situation of its first half has not affected you significantly, either at business or in health, and that better tomorrow awaits us, when we will return to normal mode.

According to this six-month turnover, it seems that our partners went through the crisis without major losses, as product sales have reached record numbers so far. So we wish everyone that the next half of the year is at least as successful.

As we announced in the previous newsletter, a big news for our company was the launch of wall process controllers. This unique series was created in collaboration with Wago company, whose hardware we have revived with our Merbon software. So if you learn to program in this environment, you will have support in two different systems: wall (card) and mark (modular).

On the following pages you will be able to get acquainted with other news. But before you move on to browsing, let us wish you a beautiful summer, a relaxing holiday and good health, not only in this "corona-time".

Team Domat Control System s.r.o.

NEW products

UI310 and UI319: Communication room controllers with PIR, CO_2 and external temperature sensor

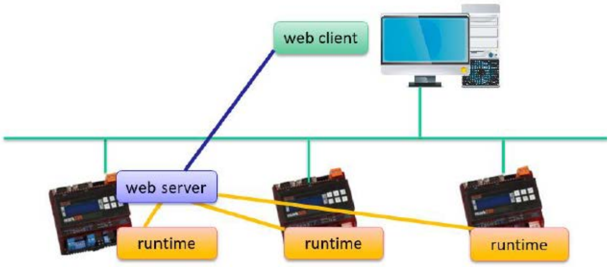
Simultaneously with the redesign of the well-known hardware UC300 of the underfloor heating controller, a new UI300 was created, ie a room controller without a control function. The UI300 includes 1 × digital input, 1 × triac output, an internal temperature and humidity sensor and an analog input for a Pt1000 temperature sensor. All values are available in the Modbus registers as well as for other UI controllers. Another model, the UI309, also contains a CO_2 sensor, so it can be used, for example, in combined systems with underfloor heating and a heat recovery unit. In addition, a PIR motion sensor is implemented in the UI310 (without CO_2 sensor) and UI319 (with CO_2 sensor) variants.

The UI319 room controller can be used, for example, in systems with cooling beams, infrared panels or another source of cold or heat, where it is worth to detect the presence of people in a temperate room. The external temperature sensor together with the measurement of the dew point by the temperature and relative humidity sensors in the room will enable high-quality active protection against dew of the cooling panels. At the same time, we can use the CO_2 sensor to solve the regulation of the VAV damper, depending on the occupancy of the room. The motion sensor can be used without a link to the regulation, only for the collection of statistical data about the use of rooms in the building. This can help optimize the occupancy of jobs in office buildings or other spaces with variable workloads.

New versions of Merbon IDE, Merbon Runtime, Merbon Visual and Merbon SCADA

A new version of Merbon IDE, 2.4.0.11, was released in the first week of June. More than 50 features have been fixed and added in the new version. In particular, we draw the attention of designers to the function of the „external web server", ie the possibility to control multiple PLCs via web pages in one of them (the web server reads data from other PLCs using the SSCP protocol, like any other client). New PLCs of all platforms

will now be delivered with runtime 2.4.0.11.
The popular Merbon Visual application in version 2.4.0.11 now offers, among other things, the option of downloading the menu definition file directly from the PLC. It is therefore not necessary to upload the definition to the application, just set the parameters of the connection to the PLC and the application will download the menu and graphics



itself. This feature greatly simplifies menu updates, so users no longer have to manually copy definition files to their mobile devices.
In the new edition of Merbon SCADA, in addition to other improvements, user-editable texts in schemas and the possibility of bulk editing of real, int and bool variables will appear, which will speed up and simplify the management of larger systems.

New release Merbon IDE 2.4.0.11. you can find **HERE**.

R710

In our offer, you have definitely come across the M710 digital counter module. Another new product is its updated version - R710. It is a microprocessor-controlled, communicative 4 binary input counter module. The module uses Modbus RTU on a RS485 bus for communication, and can be easily integrated in a variety of supervision and control systems. In addition to the overall redesign, it has added DIP switches for setting the address, which can be set physically directly on the module and the user no longer needs a computer for such settings.

You can download the data sheet **HERE.**

ISO 27001

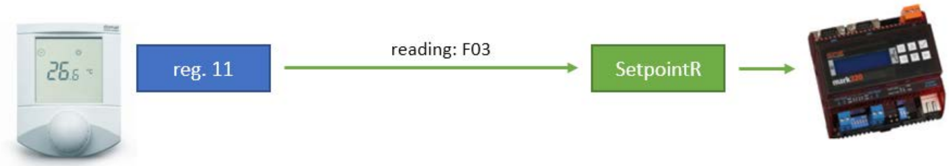
In 2014, our company obtained certification ISO 14001 - environmental management system, and subsequently ISO 9001 - quality management for the development, production and distribution of systems for measuring, controlling and regulating ventilation, heating, air conditioning, energy systems and systems and other technological units. This year we have successfully recertified and we now hold ISO 27001 - the standard for the information security management system in the organization. It includes all assets from data, through paper documents, information and communication technologies, staff training and technical protection against computer fraud.

Topic of the issue

Coupling hardware I/O points

When deploying room units UI011, room controllers UC/FC…, as well as 3rd party devices talking Modbus, there appears a problem how to write into variables which are also controlled locally – over a knob, touch schreen, or other manual control.

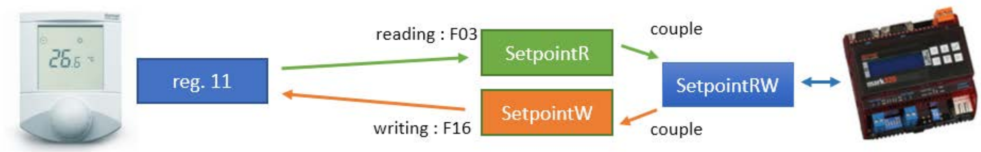
Let's take a UI011 room unit as an example: Reading into the PLC is straight and clear. The PLC requests data from the server periodically, and its communication driver writes the value into a global variable:



Configuration of a variable just to write to the device is also not so difficult:

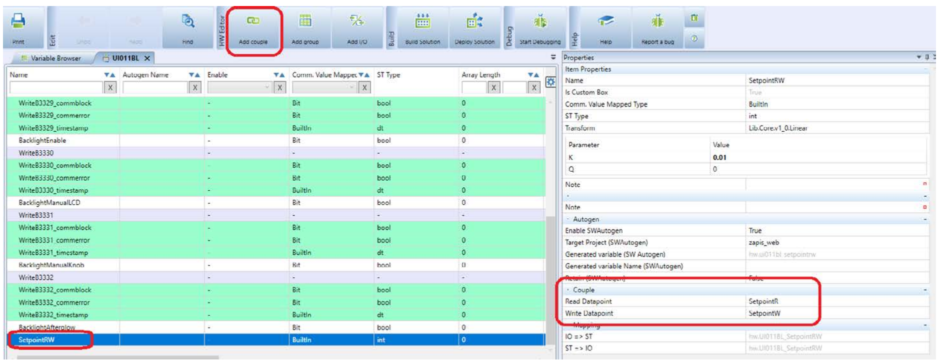
However, as soon as the value shall be set both ways (i.e. over the knob and over the web interface of the PLC), there is a problem: a web command controls the variable to write, but this variable does not reflect changes executed over the knob on a local basis. This means that the web user does not know if the variable had changed in the meantime. It would have to be displayed separately. Even then, another problem is when the value has to be set incrementally, e.g. „set the temperature by 0.5 K higher". To achieve this, the value to write must be refreshed by the actual value which is manually set in the room unit.

Therefore it is useful to create a variable which allows both to update its value from the room unit, and to write its value into the room unit on change. This can be achieved by a so called couple, or connection of two hardware I/O data points. A couple also represents a global variable.



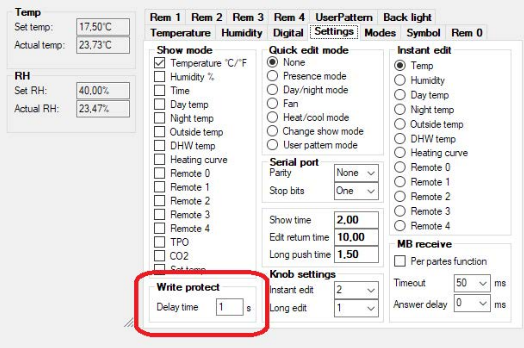
The group containing the variable to write must be set as Write on changes only.

In Merbon IDE, the definition of a couple data point looks as follows:



The SetpointRW variable is then used both to display and to set in a LCD menu, web pages etc., in the same manner as if it was a common global variable containing a setpoint.

See more screenshots and configuration proceedings including notes to the Autogen function in the Merbon IDE help. Search for „Coupling I/Os“ in the Index.



Note also that in the Domat UI… room units there is a „Write protect delay time“ parameter:

Its default value is 10 s. It is a time during which the writing to registers is blocked after each manual intervention (using the knob). The aim is to prevent unintentional overwriting of a value over the bus after manual change, before the value could be read (updated) into the PLC and rewritten back to the room unit. This issue is relevant only at PLCs where the programmer is not able to control the writing process of the communication driver. If Write only on changes is used in Merbon IDE, this setting should not be relevant.

Modbus routing

When designing and commissioning Modbus serial buses, we sometimes encounter situations where it would be advantageous to switch from a serial link to an Ethernet network and transmit data over it. These are in particular:

- Ethernet connects two locations between which can no longer lead the next serial line;
- the terminal device (computer or PLC) no longer has a free serial port and we need to connect a modbus device communicating via the serial line;
- it is not yet known where the terminal equipment will be located, while structured cabling is and will be available everywhere;
- we want to use the network as the main line.

A serial line device, which may be an air conditioner or a fan coil controller, will be called a slave (in a network environment also a server) because it provides data for a Modbus query. The query is sent by a master (usually called a client in a network environment), such as a process controller (PLC), a graphic terminal (HMI), or a visualization program (SCADA) in a computer.

Wide choice of converters with two interfaces – Ethernet and RS485 – is available on the market. But the question is how they actually transmit data on the network. Upon closer examination, we find that there are more and differ in how data from the serial link is “packed” into network packets and interpreted at the other end. Even “unpacking” requires some hardware or software that must be supported on the other end of the line. The most commonly used modes are:

- **Terminal server (virtual COM port)**, eg in **Domat R035** converter called RealPort
- **Serial bridge;**
- **Modbus router**, in Domat R035 converter called Industrial Automation.

We have discussed this topic in a two-part series, where the individual modes are described in more detail, along with a specific topology, their advantages and disadvantages. Full articles can be found **HERE**.

Training

Our trainings were also affected by the situation around coronavirus, and we also had to move to the Internet, where we regularly organize online webinars for you. You can find their recordings on our youtube channel, so you can return to them at any time. In addition to webinars, you will find a lot of new video tutorials there - such as the BACnet communication protocol, SSCP, Merbon Visual installation, HMI creation and styles and more: **https://bit.ly/3fzKBSb**

We have recently decided to organize follow-up Merbon SCADA webinars. We would like to return to classic trainings after the holidays. Please, follow our **calendar of events**, or social networks, where we will publish all the dates in advance so that you can register in time.

If you are unsure about anything, do not hesitate to contact our technical support at **+420 461 100 666** or by e-mail: **support@domat.cz**.

At the same time, we will add a few tips on how to agree (not only with our) support to make the cooperation as effective as possible for both parties, because a properly functioning technical support department is an essential part of any company that wants to offer any technology. Today's products are not trivial, whether they are programmable substations or building materials such as sealants and adhesives. To deploy them, it is necessary to know a number of rules and procedures. We learn something from manuals, something for training, but sometimes it happens that we are, as they say, at the end. Then comes support.

What technical support does

It provides technical information and assists product sales customers, designers and customers for whom turnkey orders have been realized. Provides training, webinars and collaborates in creating help and technical documentation.

Product sales customers, so-called integrators, together with designers are the creators of the system topology and connection documentation. They also provide assembly and production of switchboards, either on their own or with the help of specialized assembly companies. However, their most important task is the creation of application programs, including graphics and commissioning of the device. These activities also raise the most queries.

Technical support communicates in Czech, English and German. The documentation is available in Czech and English. If you need a translation into their language for your foreign customers, we will provide you with source files.

What technical support does not do

More precisely, what technical support should not do: to provide general information, such as the principles of operation of building technologies or the basics of electrical engineering and physics. Dew point, serial or parallel connection of appliances, the principle of a current protector, the function of a hydraulic dynamic pressure equalizer or protection against legionella are quite often addressed. However, this enlightenment is provided with pleasure, because we see that the problem does not concern our own products or services.

Technical support does not provide pricing information, contact your dealer or company reception to be redirected. The support technician also does not know when the goods will be delivered to you, this is the task of the logistics department. Loans of standard products can also be handled directly with logistics.

Multi-level technical support solution

Technical support usually has several levels. In Domat it is solved in three levels

Support level 1: This is the level you will encounter the first time you contact the technical support line. There should be practitioners who have probably already solved a problem like yours. At the same time, they have experience with building technologies and can put the problem into context. This results in their questions, sometimes seemingly strange – see below.

Support level 2: These workers are approached by first level support if they do not know what to do. These are programmers, test technicians, documentation creators and other specialists who have deep knowledge of hardware and software. During normal operation, they should do their job in peace, support is not their main job. They may only be available at certain times of the day or week.

Support level 3: The greatest "magicians", software architects, hardware developers, often external specialists. They are contacted by second-level staff if they need advice themselves. Their time is the most expensive and therefore we do not unnecessarily bother them with problems that the first two levels can solve.

This principle of escalation explains why solving more complex or non-standard problems can take some time.

How to contact support? You can read more and a few practical examples in the whole article **HERE**.

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