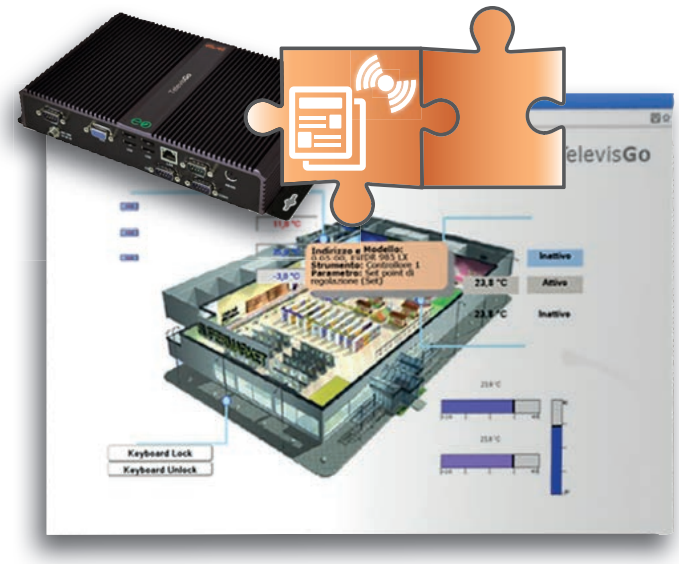
TelevisGo Application Notes **code 9IS54397-1 - rel.27.10.14**

Monitoring of compressor rack energy consumption



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DEFINITIONS AND COMPATIBLE RELEASES

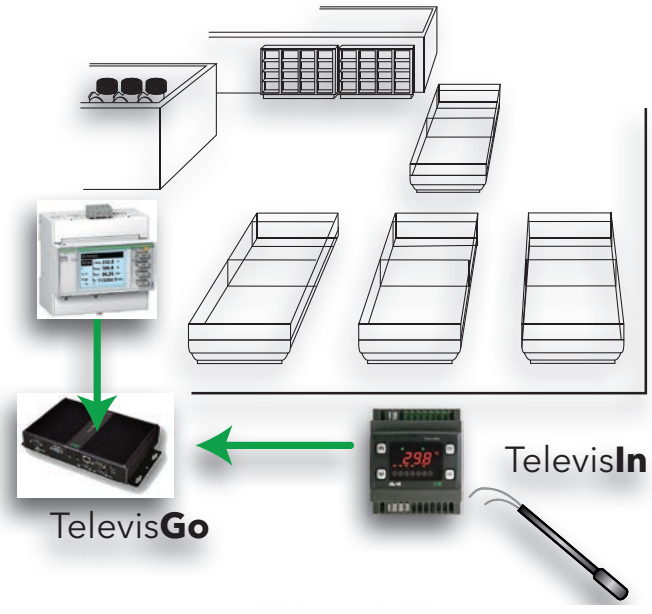
- **TelevisGo** is the Embedded PC platform by Eliwell: a monitoring and supervision system with web interface.
  TelevisGo is a system that can be expanded with plug&play algorithms
- **Instance**: Each algorithm can be instantiated; each instance is represented as a virtual instrument
- **Release**: version of ModBUS Energy Meter instruments managing plug&play algorithms
- **Pattern**: reference model for generation of alarms in the event of deviation from standard. The model is represented by pairs of values reflecting system energy consumption (kWh) and temperature (°C)

INSTALLATION OF COMPONENTS

The **Energy Pattern Deviation Alert** application compares the reference model (**pattern**) with the pair of values:

1. energy consumption of the system over **24h**, measured by an energy meter
2. average external temperature, measured by a **TelevisIn** module

and generates an alarm in the event of a deviation from the specified model.
The model can be defined by a maximum **20 pairs** of reference values.
The algorithm also establishes an energy threshold beyond which an energy consumption out of range warning is generated.



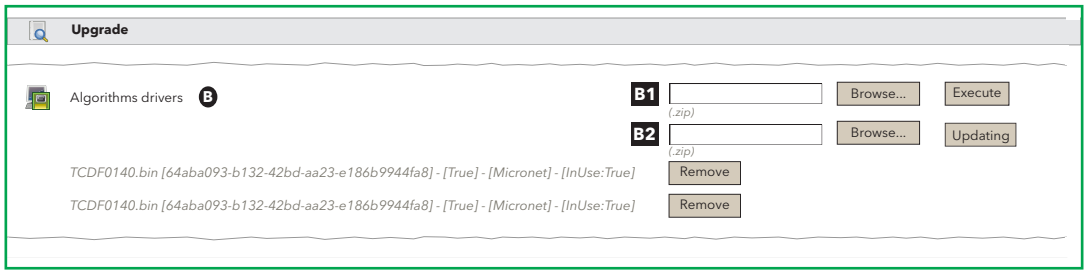
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INSTALLATION OF ALGORITHM

The **Energy Pattern Deviation Alert** algorithm, identified by **1028_EnergyPatternDeviationAlert.zip,** is a .zip file that can be downloaded from the Eliwell website after registering at the following link http://www.eliwell.it/filedownload.aspx?id=25485 path: Eliwell > Home > Technical Support > Software Download > TelevisGo

Enter the following menu[1] to load or update an algorithm:

Computer → Update



Section **B** is where the **algorithm drivers** are stored; from here, it is possible to load a new algorithm or update the driver of an algorithm already loaded.

Loading an algorithm

To load a new algorithm, press Browse in line **B1**, scroll through the folders (directories) to locate the file **1028_Energy Pattern Deviation Alert.zip** and select it. Clicking **Run**, the software automatically opens the Algorithms window (see Algorithm selection).

Updating an algorithm

To update a driver of an algorithm already loaded, press Browse in line **B2**, scroll through the folders (directories) to locate the file, and select it. Clicking Update, the software automatically opens the Algorithms window.

NOTE: an attempt to load an algorithm already present in line **B1** will generate the message "The algorithm is already present". Use **Update** to replace it with the new version preceded by the ⓘ icon.

N.B: before updating an algorithm, it is advisable to save the relative current parameters map using the menu:
Functions » Parameters » <algorithm selection> <select label> » Save map

1 **To access this section, data logging must be suspended**

ACTIVATION

To select the instances of the algorithms currently loaded, access the following menus in sequence:

Settings → Interfaces → Algorithms

The list of all previously loaded algorithms and the relative settings is shown here



The colours of the lines that will appear have the following meanings:

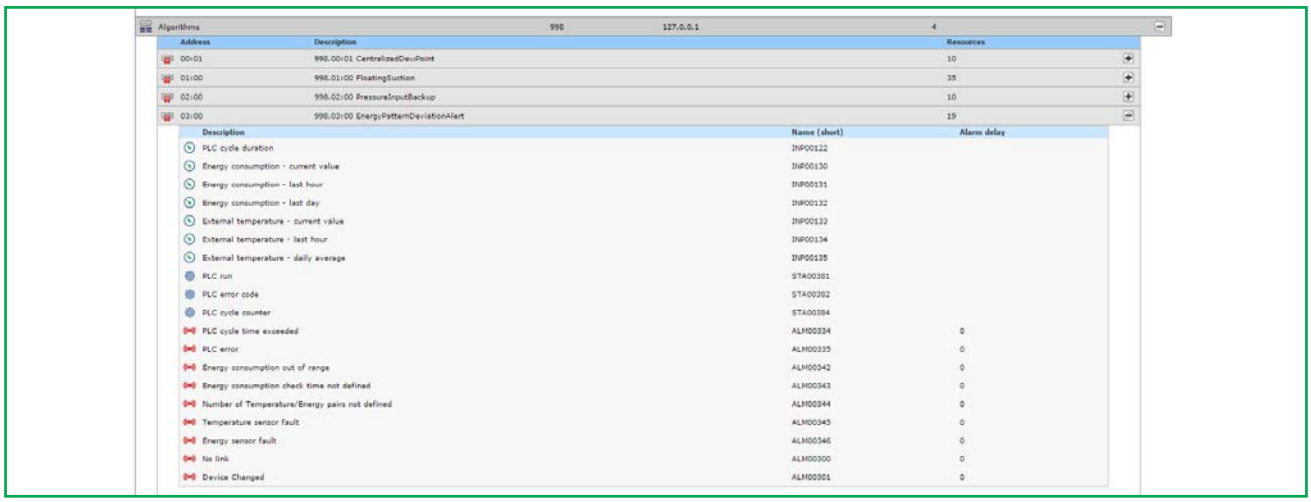
- **green:** **new** algorithm found in the virtual network
- **black:** algorithm **already present** in the virtual network

The value of the address and model linked to each algorithm instance is assigned automatically by the application.
The maximum number of instances per algorithm is **2**
The value of the **Period** displayed indicates the run time (or cycle period).
The period, expressed in seconds, can take on a value between 60 (1 minute) and 86400 (1 day).
The current value of the cycle period can be changed by entering the desired value.

Tick the checkbox ☑ on the left of the address to select the algorithm instances that will be enabled, and press **Save** to store their configuration.

Contents

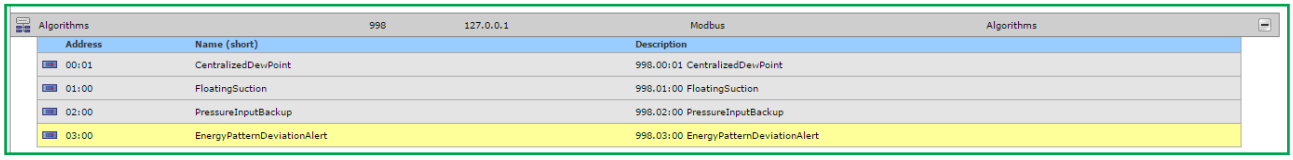
Accessing the menu: **Settings » Interfaces » Summary** the user can check which algorithms are present.



TELEVISGO CONFIGURATION

The selectors must be set correctly: an essential step if correct operation of the algorithm is to be guaranteed.

From the menu **Functions » Parameters » Step 1** select the algorithm **Energy Pattern Deviation Alert**



Click on the line (highlighted yellow) of the **Energy Pattern Deviation Alert** algorithm to access the following page, **Functions » Parameters » Step 2**
The screen shows the parameters of the selected instrument.

	Label	Description	UM	Min	Max	Default	Device	Input
☐	filter0	Selector of the TelevisIn module		0	1	view		
☐	filter1	Selector temperature probe from TelevisIn		1	1	view		
☐	filter2	Selector energy meter		0	1	view		
☐	filter3	Selector energy meter sensor		1	1	view		
☐	Version	Version		1	1	1		
☐	CheckHour	Energy consumption check time	h	0	24	24		
☐	PairsTE	Number of Temperature/Energy pairs		0	20	0		
☐	T01	External temperature 1	°C	-20	50	0		
☐	E01	Energy consumption 1	kWh	0	1000	0		
☐	T02	External temperature 2	°C	-20	50	0		
☐	E02	Energy consumption 2	kWh	0	1000	0		
☐	T03	External temperature 3	°C	-20	50	0		
☐	E03	Energy consumption 3	kWh	0	1000	0		
☐	T04	External temperature 4	°C	-20	50	0		
☐	E04	Energy consumption 4	kWh	0	1000	0		
☐	T05	External temperature 5	°C	-20	50	0		
☐	E05	Energy consumption 5	kWh	0	1000	0		
☐	T06	External temperature 6	°C	-20	50	0		
☐	E06	Energy consumption 6	kWh	0	1000	0		
☐	T07	External temperature 7	°C	-20	50	0		
☐	E07	Energy consumption 7	kWh	0	1000	0		
☐	T08	External temperature 8	°C	-20	50	0		
☐	E08	Energy consumption 8	kWh	0	1000	0		
☐	T09	External temperature 9	°C	-20	50	0		
☐	E09	Energy consumption 9	kWh	0	1000	0		
☐	T10	External temperature 10	°C	-20	50	0		
☐	E10	Energy consumption 10	kWh	0	1000	0		

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Description	Min	Max	Factory setting	Settings selected by the user
TelevisIn module selector	0	1	TelevisIn*	Specify the address if there are multiple TelevisIn devices
Selector temperature probe from TelevisIn	1	1	INP40001-1	Change if a probe other than PB1 is used: INP40001-1 TelevisIn PB1 INP40001-2 TelevisIn PB2 INP40001-3 TelevisIn PB3 INP40001-4 TelevisIn PB4 INP40001-5 TelevisIn PB5
Selector energy meter	0	1	MODEL	Model, name, address e.g. Schneider-Electric PM3250: model="*Schneider-Electric*PM3250*"
Selector energy meter sensor	1	1	DESCRIPTION	Identifier, resource name e.g. PM3250: Id="INP40000-Power"
Application version	1	1		✘ read only
Energy consumption check time	0	23	24	Set check time 24= disabled
Number of Temperature/ Energy pairs	0	20	0	Set number of Temperature/Energy pairs 0= disabled, max 20 pairs
External temperature 1	-20	50	0	Set external temperature threshold value 1
Energy consumption 1	0	1000	0	Set energy consumption threshold value 1
External temperature ..	-20	50	0	Set external temperature threshold value ..
Energy consumption ..	0	1000	0	Set energy consumption threshold value ..
External temperature 20	-20	50	0	Set external temperature threshold value 20
Energy consumption 20	0	1000	0	Set energy consumption threshold value 20

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The **Energy Pattern Deviation Alert** algorithm is preset with the aid of **instruments and resources to minimize the number of settings made by the user**
See **the UM column**, which shows an icon identifying the type of selector:

Instrument (device) selector
rule for selection of instruments on which the algorithm works.
Input resource selector (subsidiary)
rule for selection of input resource on which the algorithm works.

If selected, with a tick to the checkbox ☑, this can be changed by clicking **set** in the column **Value input.**
To display the selector setting, click on **Copy from default**

Enter the required parameters (address, name, model) and **save**

To change the selector again, press **change** and repeat the procedure.

The default algorithm is configured to read the external temperature from probe 1 INP40001-1 **TelevisIn** PB1 in °C.

Check that the unit of measure set for **TelevisIn** is the same.

To view energy consumption, the user must specify:
1. the address or name of the energy meter utilized
2. the address of the ModBUS resource indicating present consumption.

The user must also set:
- the time when the check is run (**CheckHour** param)
- the number of temperature/energy samples (**PairsTE** param)
- and configure the pairs of Tnn/Enn values consecutively, starting from **T01/E01**, up to the total number **PairsTE**

Temperature values must be in °C and consistent with the setting for **TelevisIn**.

Note. The algorithm does not generate an error message for an incorrect configuration.

Once **24h** of data acquisition have elapsed following the start time, the algorithm will perform the following operations when the check is run:
- Computation of energy consumption for the current day
- Computation of average external temperature for the current day
- Identification of the External temperature **n** / External temperature **n+1** pairing in which the average external temperature occurs
- Verification whether or not energy consumption for the current day is greater than energy consumption **n+1**, updating the status of the **Energy consumption out of range** alarm.

☑	CheckHour	Energy consumption check time	h	0	24	24		20
☑	PairsTE	Number of Temperature/Energy pairs		0	20	0		2
☑	T01	External temperature 1	°C	-20	50	0		20
☑	E01	Energy consumption 1	kWh	0	1000	0		110
☑	T02	External temperature 2	°C	-20	50	0		25
☑	E02	Energy consumption 2	kWh	0	1000	0		120

In the example indicated, it will be seen that when the average temperature for the current day is between 20 and 25 °C, the compressor rack functions correctly as long as energy consumption for the current day is no higher than 120 kWh. In the event of this value exceeding 120 kWh, the **Energy consumption out of range** alarm will be tripped.

STATUS DISPLAY

Description	Notes
Energy Pattern Deviation Alert algorithm statuses	
Energy consumption - current value	Most recent energy consumption value read
Energy consumption - last hour	Most recent hourly energy consumption sample
Energy consumption - last day	Energy consumption on previous day
External temperature - current value	Most recent external temperature value read (°C)
External temperature - last hour	Most recent hourly external temperature sample (°C)
External temperature - daily average	Average external temperature on previous day (°C)
Energy consumption out of range	Alarm indicating energy consumption above the set threshold
Energy consumption check time not defined	Time of check on energy consumption has not been set (**CheckHour** param); select and set the time at which the check is to be run
Number of Temperature/Energy pairs not defined	Number of temperature/energy pairs has not been set (**PairsTE** param); select and set the number of pairs
Temperature sensor fault	External temperature sensing error
Energy meter fault	Energy consumption metering error
PLC prefix: Preset algorithm diagnostics	
PLC cycle duration	Duration of algorithm run
PLC run	Algorithm running
PLC error code	Algorithm error code
PLC cycle counter	Algorithm run cycle counter
PLC cycle time exceeded	Active if the cycle time of the algorithm exceeds the set value
PLC error	Active if the PLC error code is other than 0 * (check)
Default resources associated with all instruments	
No Link	Algorithm rendered inoperative by an internal blocking error (contact technical support)
Device changed	not used

The commands **Start PLC** and **Stop PLC** are available and always present and visible in the panel **Functions » Commands**