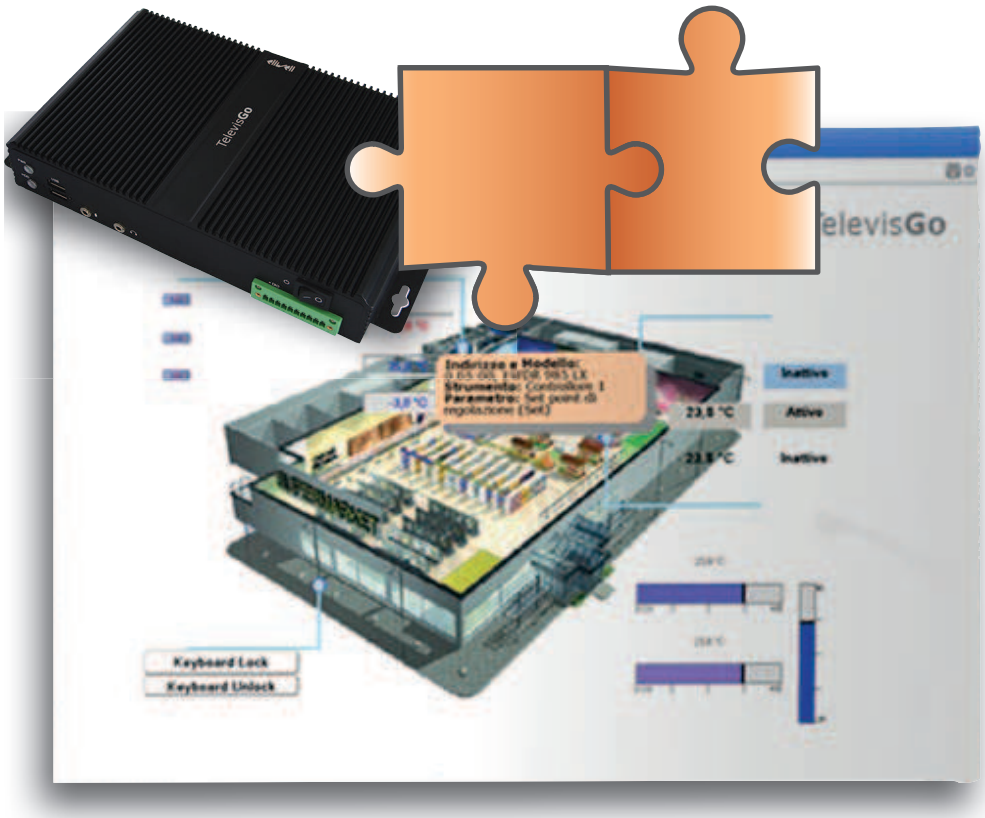
FloatingSuctionDOMINO

Optimization of compressor rack suction pressure

User manual

12/2023



TGO-FSD-02EN

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Safety information

Important information

Read these instructions carefully and visually inspect the equipment to familiarize yourself with the controller before attempting to install it, put it into operation or service it. The following warning messages may appear anywhere in this documentation or on the equipment to warn of potential dangers or to call attention to information that can clarify or simplify a procedure.



The addition of this symbol to a “Danger” or “Warning” label indicates the existence of an electrical hazard that could result in personal injury should the user fail to follow the instructions.



This is the safety warning symbol. It is used to warn the user of the potential dangers of personal injury. Observe all the safety warnings that follow this symbol to avoid the risk of serious injury or death.

⚠ DANGER

DANGER indicates a dangerous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a dangerous situation which, if not avoided, **could result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a potentially dangerous situation which, if not avoided, **could result in** minor or moderate injury.

NOTICE

NOTICE used in reference to procedures not associated with physical injuries.

Note

Electrical equipment must only be installed, used and repaired by qualified technicians. Neither Schneider Electric nor Eliwell accept any liability for any consequences arising from the use of this material.

An authorized person is someone in possession of the skills and knowledge applicable to the structure, to the operation of the electrical equipment and to its installation, and who has received safety training in order to recognize and avoid the risks involved.

Personnel qualification

Only personnel with suitable training and an in-depth knowledge and understanding of the contents of this manual and any other documentation relevant to the product are authorized to work on and with this product. Qualified personnel must be capable of identifying any dangers which may arise from the parameterization or changing of parameter values, and from the use of mechanical, electric and electronic equipment in general. Plus, they must be familiar with the personal safety laws, provisions and regulations which must be observed during system planning and implementation.

Permitted use

This product is intended for the management of compressor racks

The algorithm must be installed and used in accordance with the instructions provided.

Prohibited use

Any use other than that indicated in the above paragraph "Permitted use" is strictly prohibited.

Liability and residual risks

The liability of Schneider Electric and Eliwell is limited to the correct and professional use of the product according to the directives referred to herein and in the other supporting documents, and does not cover any damage (including but not limited to) the following causes:

- unspecified installation/use and, in particular, in contravention of the safety requirements of the legislation in force in the country of installation and/or specified in this document;
- product tampering and/or alteration;
- installation/use on equipment that does not comply with the regulations in force in the country of installation.

Information about...

Purpose of the document

This document describes **FloatingSuctionDOMINO** operation when using Televis**Go**.

Note: read this document and all related documents carefully before installing, operating or servicing the controller.

Note regarding validity

This document applies to **FloatingSuctionDOMINO** and Televis**Go**.

The characteristics of the products described in this document are intended to match the characteristics that are available on www.eliwell.comEliwell. As part of our corporate strategy for constant improvement, we may revise the content over time to enhance clarity and accuracy. If you see a difference between the characteristics in this document and the characteristics on www.eliwell.comconsider www.eliwell.com to contain the latest information.

Cybersecurity

For information on cybersecurity go to Recommended Cybersecurity Best Practice

Related documents

Publication title	Reference document code
RTX600/VS DOMINO ZERO user manual	RTXVS-00IT MAN RTX600VS EN
RTX600/V DOMINO ZERO user manual	RTX_V-00IT MAN RTX600V EN
RTD600/V DOMINO ZERO user manual	RTD_V-00IT MAN RTD600V EN
RTX600/VS DOMINO user manual	9MA00275 MAN RTX600VS DOMINO EN
RTX-RTD600/V DOMINO user manual	9MA00277 MAN RTX-RTD600V DOMINO EN
EWCM 9000 eo user manual	9MA00233 EWCM_EO UserManual EN
EWCM 9000 PRO / CO2T user manual	9MA00272 EWCM9000 PRO UserGuide

You can download these technical publications and other technical information from our website at: www.eliwell.com

Information on Non-Inclusive or Insensitive Terminology

As a responsible, inclusive company, Schneider Electric is constantly updating its communications and products that contain non-inclusive or insensitive terminology. However, despite these efforts, our content may still contain terms that are deemed inappropriate by some customers.

Product related information

⚠ ⚠ DANGER

RISK OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Disconnect all power from all equipment including connected devices prior to removing any covers or doors, or installing or removing any accessories, hardware, cables or wires except under the specific conditions specified in this hardware guide.
- Always use a properly rated voltage sensing device to confirm the power is off where and when indicated.
- Before restoring the power supply, replace and secure all covers, hardware components and cables.
- For all the devices requiring it, make sure there is an effective ground connection.
- Use only the specified voltage when operating this device and any associated products.

Failure to follow these instructions will result in death or serious injury.

This equipment is designed to operate in non-hazardous areas and where applications which generate - or could potentially generate - hazardous atmospheres have been isolated. Install this equipment only in areas and with applications known to be constantly free from hazardous atmospheres.

⚠ DANGER

RISK OF EXPLOSION

- Install and use this equipment in non-hazardous locations only.
- Do not install or use this equipment in applications which could generate hazardous atmospheres, such as those using flammable refrigerants.

Failure to follow these instructions will result in death or serious injury.

For information regarding the use of control equipment in applications capable of generating hazardous materials, please contact the regulatory office or the local, regional or national certification authority.

⚠ WARNING

LOSS OF CONTROL

- The system designer must consider the potential failure modes of the control circuit and, for some critical control functions, provide a means for reaching a safe condition during and after a circuit failure. Examples of critical control functions are the emergency stop and end of travel stop, power supply cut-off and restart.
- Separate or redundant control circuits must be provided for critical control functions.
- The system control circuits can include communication connections. Keep in mind the implications of transmission delays or sudden connection failures.
- Comply with all standards regarding accident prevention and local applicable safety directives. (1)
- Every implementation of this equipment must be tested individually and completely in order to check its proper operation before it is commissioned.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

(1) For additional information, refer to the standards NEMA ICS 1.1 (latest edition), “Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control” and NEMA ICS 7.1 (latest edition) “Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems” or to equivalent standards that regulate your particular location.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Only use Eliwell-approved software in conjunction with this equipment.
- Update your application program every time you change the physical configuration of the hardware.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Suitable care and precautions must be taken when using this product as a control device, to avoid unforeseen consequences deriving from the operation of the controlled machine, variations in the state of the controller or the modification of the data memory or machine operating parameters.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Configure and install the mechanism enabling the remote HMI interface locally on the machine, in order to maintain local control over the machine whatever remote commands are sent to the application.
- Before trying to control the application remotely, it is indispensable to be fully familiar with the application and the machine.
- Take the necessary precautions to ensure that the remote operations are performed on the required machine, producing clear documentation to identify the application and the respective remote connection.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTE: Schneider Electric works to the best practices in the sector to develop and implement control systems. This includes a "**Defense-in-Depth**" approach to guarantee an industrial control system. This approach places the controllers behind one or more firewalls to limit access only to authorized personnel and protocols.

⚠ WARNING

UNAUTHENTICATED ACCESS AND SUBSEQUENT NETWORK INTRUSION

- Assess whether your environment or your machines are connected to your critical infrastructure, and in this case, take the appropriate prevention measures, based on defense-in-depth, before connecting the automation system to any network.
- Minimize the number of devices connected to a network.
- Isolate your industrial network from other networks in your company.
- Protect any network from unintentional accesses using firewalls, VPNs or other proven security measures.
- Monitor the activities in the systems.
- Prevent direct access or direct connection to the devices by unauthorized persons and unauthenticated actions.
- Prepare a recovery plan including the backup of the system and the process information.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Introduction

General Description

The **FloatingSuctionDOMINO** algorithm can be used to optimize the compressor rack suction pressure, which is typically set - with a certain margin of safety to withstand peak conditions, adapting it to the actual conditions of the system.

Each minute the algorithm monitors the temperature of the cabinets and, depending on the actual temperature detected, adjusts the EWCM PRO suction setpoint.

The algorithm updates all relevant variables by only reading some of the information from the refrigerated cabinets. RTX

Up to 4 instances of floating suction algorithms can be commisioned; each can manage up to 30 RTX devices.

Each algorithm instance works on a circuit, for example Negative Temperature, Positive Temperature, and it is completely independent from each of the other instances.

Cooling requests

The algorithm measures the "cooling request" made by the RTX and increases the suction setpoint of the EWCM PRO when various conditions are satisfied.

These are some of the definitions you will find in this document

Low cooling request

A “low cooling request” occurs when the control temperature is lower than: the setpoint (typically 2.0 °C) + an offset of our choice (typically 0.5 °C).

For example: setpoint (2.0 °C) + offset (0.5 °C) = 2.5 °C.

In this situation we can increase the offset: the **Floating Suction DOMINO**, for example, can calculate an offset of 1 bar, so that the suction setpoint can go from 26 bar to 27 bar.

Low cooling request with low superheat

The control temperature is regulating properly, but there are cabinets where the superheat temperature is under its setpoint.
In this situation we lower the suction setpoint.

Control type

Control takes place based on the value of parameter **rE** of the RTX controllers. Depending on the models, control will be ON-OFF or continuous.

The algorithm manages the following values of the parameter **rE**.

ON-OFF control (rE=0, rE=1 or rE=4)

RTX models typically regulate in ON-OFF mode. If the compressor is on a cooling request is made; no change to the offset or decrease. If the compressor is off there is no cooling request but optimization is possible.

Continuous control (rE=5)

RTX DOMINO and RTX DOMINO ZERO models regulate in continuous mode.

NOTE. Mixed systems with RTX and RTX DOMINO and RTX DOMINO ZERO will be a possibility.

Algorithm Installation

Definitions and compatible releases

The **FloatingSuctionDOMINO** is compatible with the following tools:

Model	Firmware (msk)
EWCM 8900-9100-9900 eo	504
RTD-RTX 600/V-PID	509
EWCM 9000 PRO/CO2T	613
RTX 600/VS DOMINO	627
RTX-RTD 600/V DOMINO	639
RTX 600/VS DOMINO ZERO	755
RTX 600/V DOMINO ZERO	756

Algorithm Download

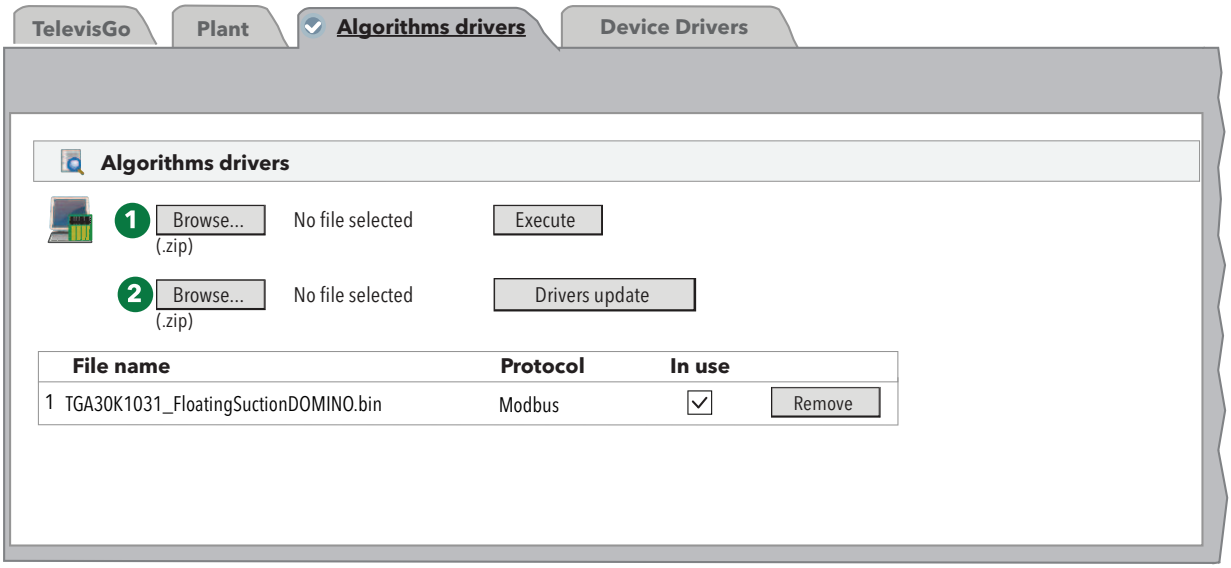
To download the latest version of **FloatingSuctionDOMINO**:

1. Go to the website www.eliwell.com
2. Log in (if you are not registered, proceed with registration)
   https://www.eliwell.com/it/Servizi/Area-Riservata.html
3. Access the page for Televis**Go**
   https://www.eliwell.com/it/Family/TelevisGo.html
4. Access the page for the code corresponding to your product
5. Access the **Software** *tab*
6. In the Televis**Go Algorithms** section, use the drop-down menu to select **FloatingSuctionDOMINO**
7. Click Televis**Go Algorithms** to start downloading

Algorithm Installation

Access Televis**Go**

- Access the page **Computer** > **Update** > **Algorithms Drivers**



Reference	Description
1	To load a new algorithm
2	To update an algorithm already installed

Loading an algorithm

To load an algorithm:

1. Press **Select file** in row **1**
2. Select the file to load (1031_FloatingSuctionDOMINO.bin)
3. Press **Execute**

The software will automatically open the Algorithms window.

Updating an algorithm

To update an algorithm:

1. Press **Select file** in row **2**
2. Select the file to load
3. Press **Drivers update**

The software will automatically open the Algorithms window.

NOTE: If you try to update an algorithm using the **Execute** functions, the screen will display this message: "**Algorithm already present**". Use the **Drivers update** function instead.

Updating the FloatingSuctionDOMINO will cause the parameter values entered by the user to be lost.

NOTICE
LOSS OF MAP VALUES • Save the parameter map before updating the FloatingSuctionDOMINO. • Reload the parameter map after updating the FloatingSuctionDOMINO. **Failure to follow these instructions can result in equipment damage.**

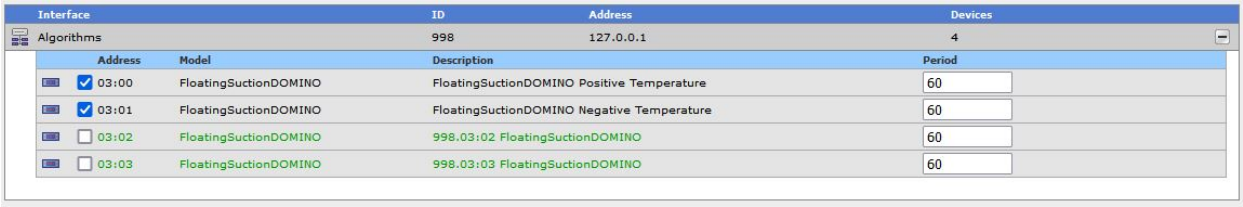
Activation

Instance activation

To select the algorithm instances, enter the **Algorithms** directory via the path:

Settings > **Interfaces** > **Algorithms**

The following menu lists all the algorithms loaded with the corresponding settings:



1. Rows shown in black are algorithm instances already selected by the user
2. Rows shown in green are algorithm instances available to be selected by the user

The application automatically assigns an address and a model to each instance. The FloatingSuctionDOMINO has up to four instances.

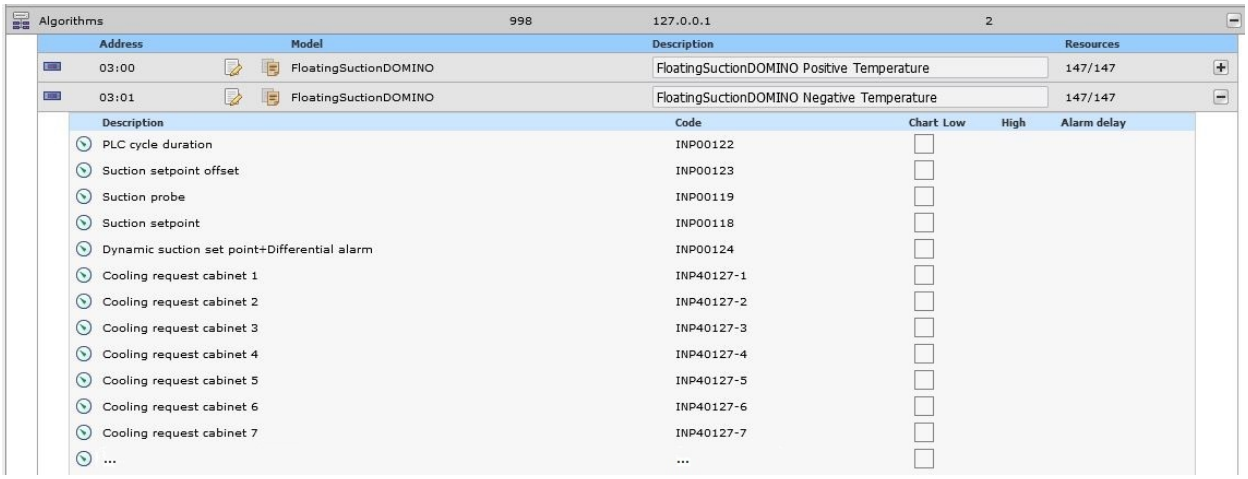
NOTICE
INOPERABLE EQUIPMENT Do not change the Period Interval set by factory default to 60 seconds. **Failure to follow these instructions can result in equipment damage.**

The ☑ key can be used to select the instances to be enabled and the **Save** button to store the configuration of the instances.

NOTE. In a supermarket there are typically Negative Temperature and Positive Temperature circuits, therefore usually two instances are selected.

Contents

The Settings->Interfaces->Physical Network menu can be used to view all the instances already selected:



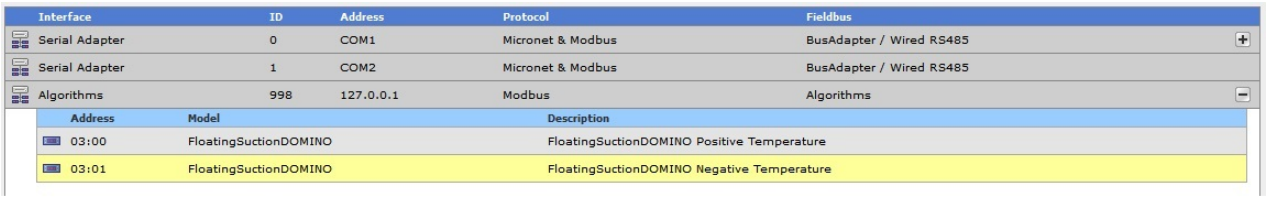
TelevisGo Configuration

The Offset_Unit_of_Measure parameter defines the measurement unit according to which the controller adjusts the system, and affects the temperature / pressure parameters.

NOTICE
INOPERABLE EQUIPMENT Set the Offset_Unit_of_Measure parameter according with the unit of measure chosen for the compressor rack. **Failure to follow these instructions can result in equipment damage.**

Parameters which depend on unit of measure are Offset_Max and Safety_Suction_Pressure_Hysteresis.

To configure the algorithm, enter the menu: **Functions** > **Parameters** and select the **FloatingSuctionDOMINO**.



Press **FloatingSuctionDOMINO** in line with the row for the algorithm to enter the list of parameters associated with the algorithm.

Description	UM	Min	Max	Factory setting	Settings to be made by the user
Cabinets	/	0	30	/	Specify model, name or address of the controllers used by the algorithm
Cabinet compressor status	/	1	1	STA40032-1	Read-only
Cabinet defrost status	/	1	1	STA40037-1	Read-only
Cabinet Stand-by status	/	1	1	STA400016	Read-only
Cabinet No-Link status	/	1	1	ALM00300	Read-only
High alarm	/	1	1	ALM40231-*	Read-only
Compressor rack	/	0	1	EWCM *PRO*	Specify the address if there are several EWCM in the network (R)
EWCM unit of measure	/	1	1	/	Read-only
EWCM suction probe	/	1	2	INP40123:4-1	Change if using psi or absolute pressure, or if value read from circuit 2: INP40123:2-1 Circuit 1 Bar/Absolute suction pressure INP40123:4-1 Circuit 1 Bar/Relative suction pressure INP40123:3-1 Circuit 1 psi/Absolute suction pressure INP40123:5-1 Circuit 1 psi/Absolute suction pressure To read the suction pressure of circuit 2, change the setting to INP40123:2-2 (for example, for Bar/Abs).

Description	UM	Min	Max	Factory setting	Settings to be made by the user
Suction setpoint EWCM	/	1	2	INP40124:4-1	Change if using psi or absolute pressure, or if value read from circuit 2: INP40124:2-1 Circuit 1 Bar/Absolute suction pressure INP40124:4-1 Circuit 1 Bar/Relative suction pressure INP40124:3-1 Circuit 1 Psi/Absolute suction pressure INP40124:5-1 Circuit 1 Psi/Absolute suction pressure To read the suction pressure of circuit 2, change the setting to INP40124:2-2 (for example, for Bar/Abs).
Compressor rack EWCM	/	0	1	EWCM *PRO*	Specify the address if there are several EWCM in the network (W)
Watchdog EWCM	/	1	1	FNC00130	Read-only
Suction setpoint offset EWCM	/	1	1	HTrem1 LTrem1	HTrem1 for Positive Temperature LTrem1 for Negative Temperature
Algorithm version	/	7	7	7	Read-only
Stand-by	/	False	True	False	Set to False to allow the algorithm to change the setpoint
Dead band upper threshold	%	85	95	95	/
Dead band lower threshold	%	65	80	75	/
Total cabinets	/	0	30	0	Maximum number of cabinets
Number of cabinets in the Dead Band	/	0	10	0	Maximum number of cabinets with cooling percentage within the dead band
Time spent above the dead band	min	5	60	15	Maximum time spent above the dead band
Time spent in dead band	min	5	60	15	Maximum time spent within the dead band
Maximum offset limit	/	0	10	0	Upper suction setpoint offset calculated
Minimum offset limit	/	0	0	0	Lower suction setpoint offset calculated Always 0
Offset increase step	/	0	1	0	Suction setpoint offset increase gradient
Offset decrease step	/	0	1	0	Suction setpoint offset decrease gradient
Exclusion time after defrost	min	0	30	0	Calculated cabinet exclusion time after defrost
Cabinet cooling request after defrost	%	0	100	0	Value at which the cooling call percentage for each cabinet is initialized upon exiting defrost
Cooling request calculation time interval	min	15	60	30	/

Description	UM	Min	Max	Factory setting	Settings to be made by the user
Unit of measure	/	0	4	1	Algorithm working unit of measure: • With the EWCM PRO type the same value of the 01.002–SbP parameter • With the EWCM eo type the same value of the 547-UMCP parameter
Suction pressure/temperature safety differential	/	0	99	10	Safety check that the suction pressure does not go too high

The **FloatingSuctionDOMINO** is provided with factory settings aimed to minimize the settings that need to be performed by the user.

The **UM** column identifies the type of selector by means of an icon:

ICON	TYPE OF SELECTOR	DESCRIPTION
	Device selector	Selects the devices on which the algorithm works.
	Input resource selector	Select one or more input resources on which the algorithm works.
	Output resource selector	Select one or more output resources on which the algorithm works.

Device selector

The user can filter by address, by model or by device description.

For example, if you consider the first filter as address 00:*, where * is the wildcard character. The range extends from 00:00 to 00:15. Any device in this range, regardless of the type of model, will be detected and added.

A second filter by model can be added. For example, RTX* detects all models beginning with RTX.

The third filter can narrow the search by adding a description of the device or part. For example, Meat cabinet, Fish cabinet, Dairy, Frozen food island, etc. The wildcard string * can always be used.

NOTE. Device addresses are recommended over device descriptions, since descriptions can change over time.

Cabinet selector

This is used to select which cabinets are included in the system load calculation.

To configure it, enter the Model, Name or Address of the cabinet.

The algorithm calculates the average time in which each instrument sends for Cooling during the **Cooling request calculation time interval** in relation to cabinet compressor running time.

IF THE CABINET IS...	THEN THE COMPRESSOR IS...
In Stand-by	OFF
In No-Link	ON

During defrost, the average load percentage is forced to 0%.

On resuming operation after defrost and after the **Exclusion time after defrost**, the average load percentage is forced to the value set by **Cabinet cooling request after defrost**.

Compressor Racks

The compressor racks selector is used to configure on which **EWCM** controller to set the Suction setpoint offset.

If there are several **EWCM** controllers in the network, set the address.

The suction probe is factory set to the value **INP40123:4-1** corresponding to the suction pressure reading for circuit 1 in applicable Bar units.

Only change it for:

- EWCM **UM** in PSI;
- Absolute pressure selection;
- Circuit 2 suction pressure reading.

Parameters

The thresholds for the **Dead Band**, used by the algorithm to assess cooling distribution in the various cabinets, can be set in parameters:

Description	UM	Min	Max	Factory setting	Settings to be made by the user
Dead band upper threshold	%	85	95	95	Percentage over which the cabinet/display unit is perceived as 'in difficulty'
Dead band lower threshold	%	65	80	75	Percentage under which the cabinet/display unit is perceived as comfortably within temperature

The setpoint is:

Increased if...	Decreased if...
All cabinets are under the Dead Band	Some cabinets are in the Dead Band for the **Time in Dead Band** period
Some cabinets are in the Dead Band for the **Time in Dead Band** period	Some cabinets are over in the Dead Band for the **Time in Dead Band** period

The steps determining the offset increase or decrease are set by the parameters:

Description	UM	Min	Max	Factory setting	Settings to be made by the user
Offset increase step	/	0	1	0	Suction setpoint offset increase gradient
Offset decrease step	/	0	1	0	Suction setpoint offset decrease gradient

NOTE. The recommended value for step is 0.05.

Diagnostics

Suction unit of measure error:

Activated when the unit of measure specified in the algorithm is different from the one set on the compressor rack.

The offset is automatically set to 0.

Suction pressure/temperature safety differential:

Activated when the suction probe value is above the current suction setpoint (includes offset) + safety differential.

The offset is automatically set to 0.

High alarm:

Activated when at least one of the high alarm of the selected devices is active.

The offset is automatically set to 0.

Processing status

Description
Specific diagnostic information for the FloatingSuctionDOMINO
Offset to be added to the suction setpoint EWCM
Suction probe value read by EWCM
Suction setpoint value read by EWCM
Dynamic suction setpoint (Actual suction setpoint) + Alarm differential
Cabinet cooling call percentage 0%..100%, one for each cabinet
Number of detected cabinets associated with the algorithm
Error code for suction sensor restored by suction probe reading EWCM
Suction setpoint error code
Suction unit of measure error. Unit of measure EWCM / algorithm misalignment.
Suction sensor/setpoint error Activates the safety differential alarm by default
Suction pressure/temperature safety differential The suction pressure has exceeded the safety threshold
PLC prefix: general diagnostic information
PLC cycle duration
PLC run: On=in execution / Off=in stand-by
PLC error code: algorithm error code
PLC cycle meter: algorithm execution cycle meter
PLC cycle time exceeded.
PLC error. Activated if the PLC error code is anything other than 0
Default resources associated with all instruments
No - Link. Algorithm not running due to an internal error (contact technical support)
Device changed. Not used

The commands **Start PLC** and **Stop PLC** are also available and always present; they are shown in the **Functions** > **Commands** page.

FloatingSuctionDOMINO parameters

Critical algorithm parameters

The **FloatingSuctionDOMINO** has many parameters, but the most important for control purposes are the control parameters.

The most important are highlighted in yellow below:

☑	Standby			Falso	Vero	Falso	
☐	Type_Compressor_Rack			0	1	1	
☐	Basic_Mode			Falso	Vero	Falso	
☐	Threshold_High		%	0	100	95	
☐	Threshold_Low		%	0	100	75	
☑	Cabinets_Number			1	30	0	15
☑	Cabinets_Subset			1	10	0	5
☐	Time_Above_High		min	5	60	15	
☐	Time_Between_Low_and_High		min	5	60	15	
☐	Offset_Unit_of_Measure			0	4	1	
☑	Offset_Max			0	10	0	2

Updating the FloatingSuctionDOMINO will cause the parameter values entered by the user to be lost.

NOTICE

LOSS OF MAP VALUES

- Save the parameter map before updating the FloatingSuctionDOMINO.
- Reload the parameter map after updating the FloatingSuctionDOMINO.

Failure to follow these instructions can result in equipment damage.

Stand-by

Due to the default setting, the **FloatingSuctionDOMINO** is in **Stand-by** mode: all calculations are performed but the algorithm does not change the EWCM PRO suction setpoint.

The user MUST change this parameter.

NOTICE

INOPERABLE DEVICE

Check the parameters before changing the Stand-by status of the algorithm.

Failure to follow these instructions can result in equipment damage.

Total number of cabinets

The number of cabinets is declared by the Cabinets_Number parameter, and it is checked against the actual number of physical cabinets. The two must be the same, otherwise an alert is raised.

Number of cabinets in the Dead Band

The maximum number of cabinets in the Dead Band is declared by the Cabinets_Subset parameter.

We suggest that Cabinets_Subset is about 1/3 of the total number of Cabinets_Number.

Offset

The **Offset_Max** indicates the upper limit for the offset increase of the EWCM suction setpoint. Suppose we set Offset_Max=2, and the current suction setpoint for the EWCM is 30 bar, therefore the **Optimization of compressor rack suction pressure** will push the suction pressure up to a maximum of 32 bar.

The **Offset_Set_Increase** / **Offset_Set_Decrease** can be adjusted for a quicker or slower response to changes of the cooling request.

Note. The minimum offset **Offset_Min** is always 0.

FloatingSuctionDOMINO

Description

The **FloatingSuctionDOMINO** can be used to read the value of several variables for the various controllers every minute and adapt the suction setpoint on the EWCM.

3 situations are described below:

- **CASE 1** = Optimal working condition:
  - **Control Probe** ≤ Setpoint+Offset1
- **CASE 2** = Dead Band:
  - Setpoint+Offset1 < **Control Probe** < Setpoint+Offset2
- **CASE 3**= Critical zone
  - **Control Probe** ≥ Setpoint+Offset2 or
  - **Superheat Probe** ≤ Setpoint

Legend

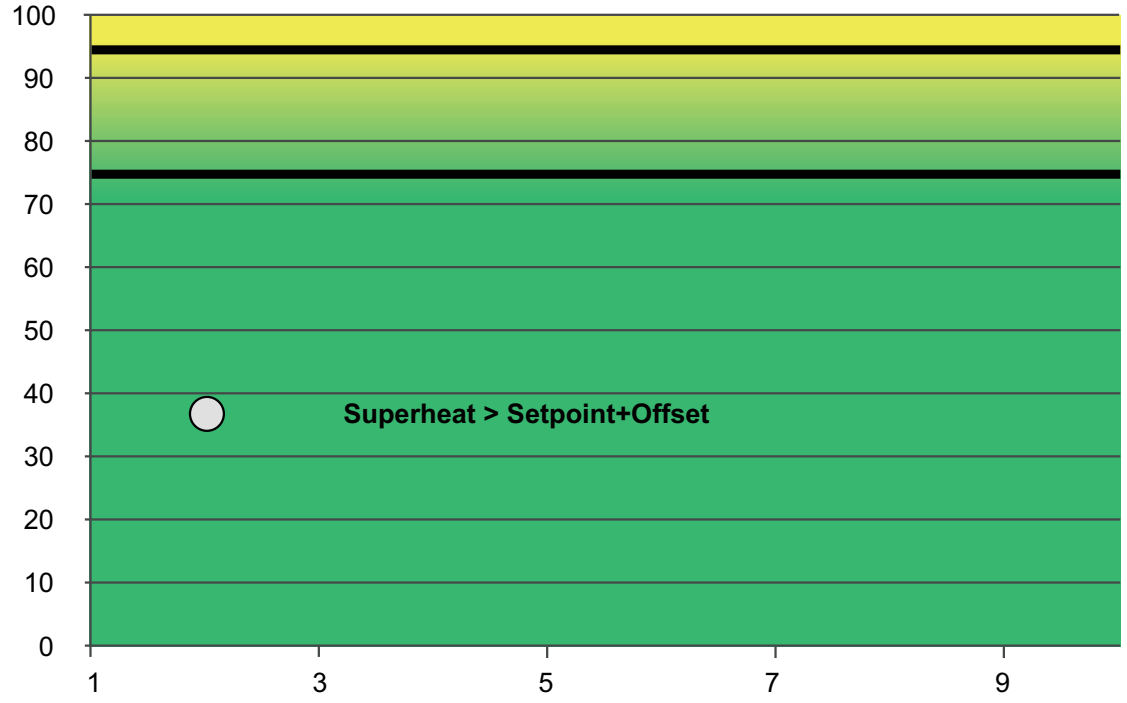
- Green area: the algorithm increases the suction setpoint
- Dead band: suction setpoint unchanged
- Yellow area: the algorithm decreases the suction setpoint.

Case 1

Control probe ≤ Setpoint + Offset1

This is the situation we call “Low cooling request”.
To decide whether to increase, maintain or decrease the suction setpoint for the EWCM, we also check the superheat probe:

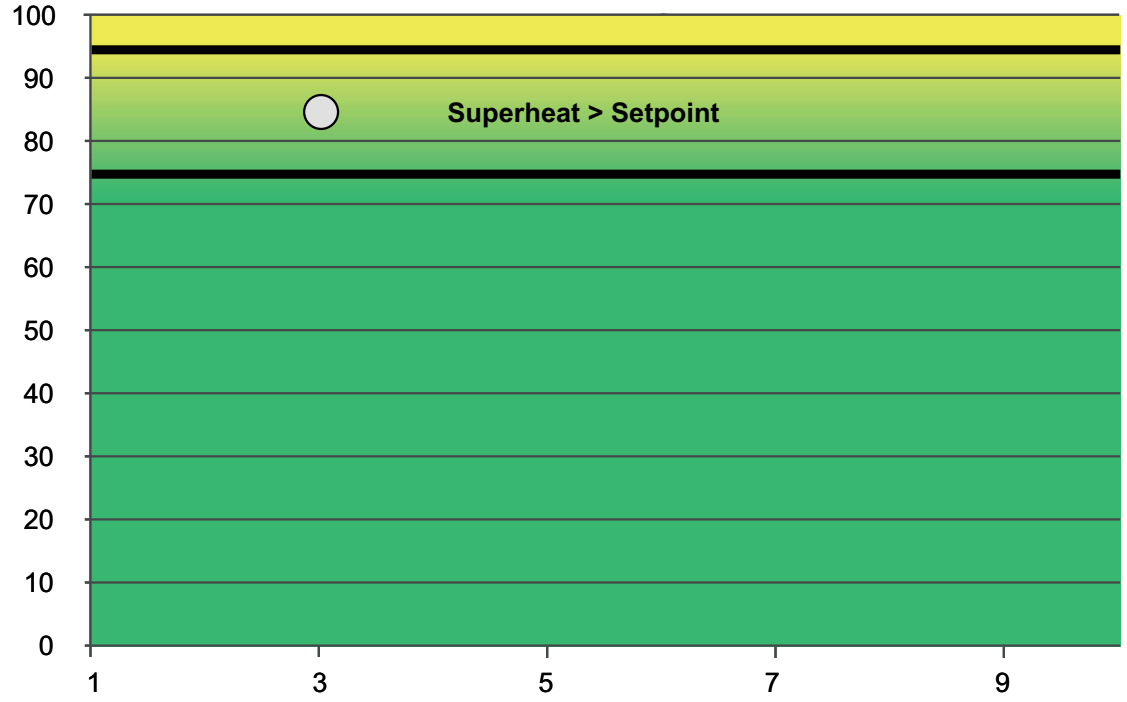
If the algorithm detects a control probe lower than its(Setpoint + Offset) and superheat probe is above its (Setpoint + Offset), than the suction setpoint is increased.



Case 2

Control probe > Setpoint+Offset1 AND Control probe < Setpoint+Offset2

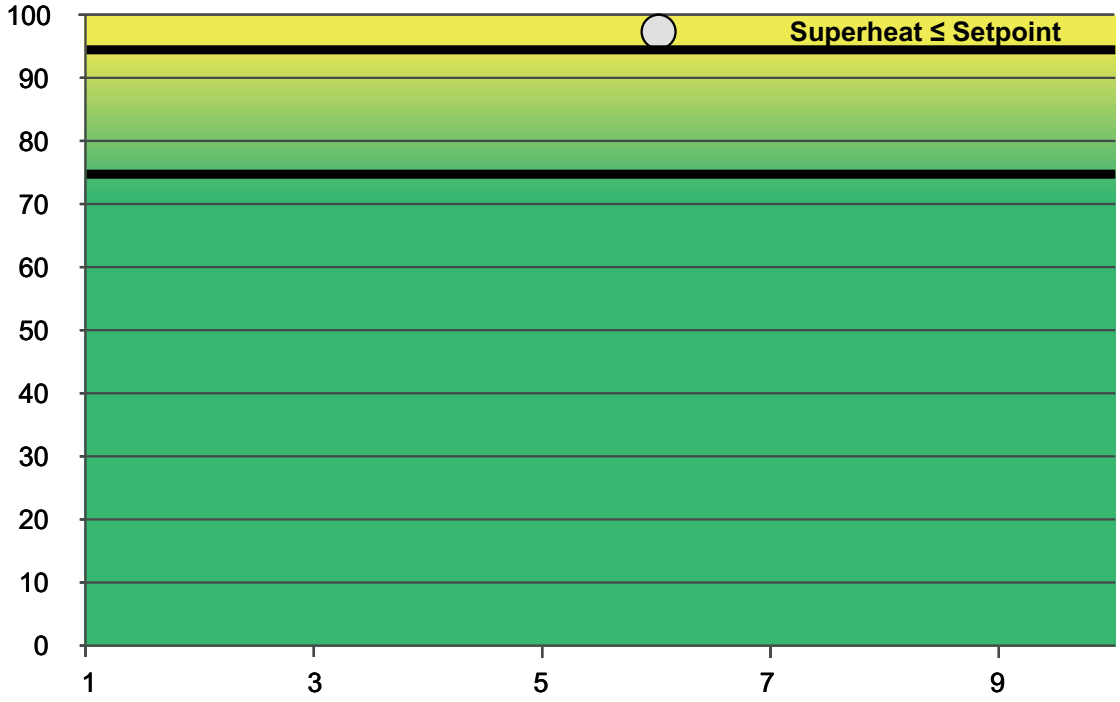
The superheat probe is above the setpoint.
In this situation the algorithm keeps the suction setpoint unchanged.



Case 3

Control probe ≥ Setpoint+Offset2 OR Superheat ≤ Setpoint

The control probe is greater than its(Setpoint+Offset2), the superheat probe is lower than its Setpoint. In this situation the algorithm decreases the suction setpoint.



Example

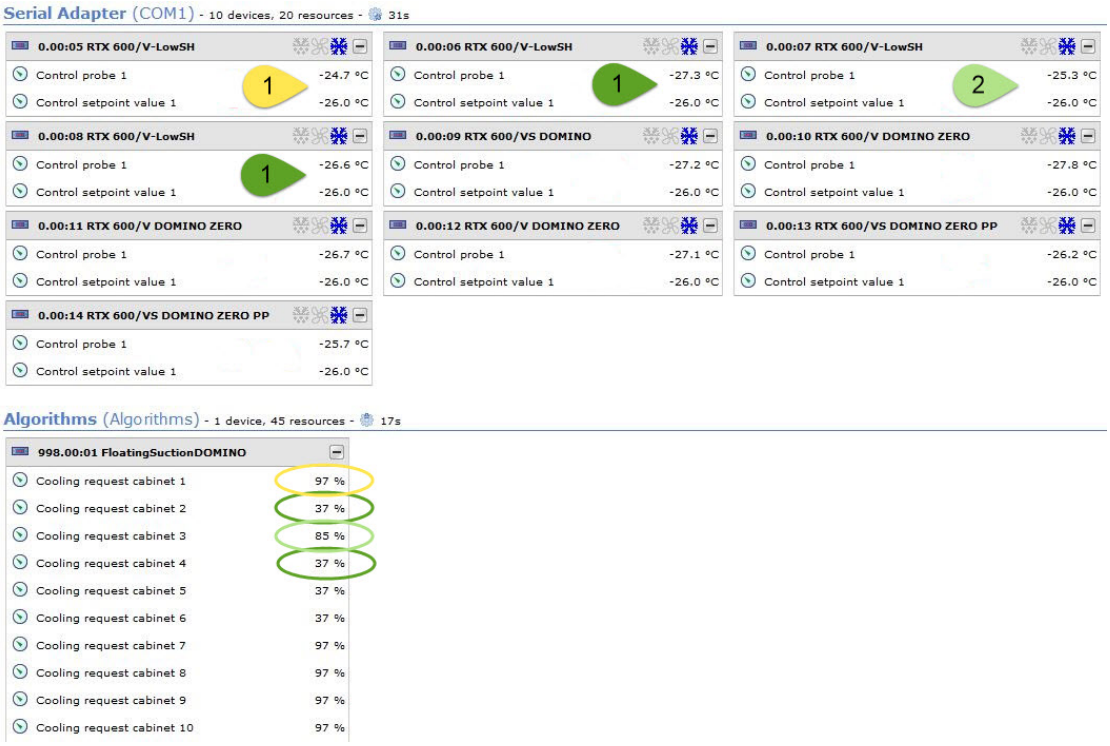
Consider a system with

- 10 cabinets
- control setpoint -26.0°C
- offset of 0.5°C

In the first case, the control probe measures -26.7°C and the power request is 37%;

In the second case, the control probe measures -25.3°C and the power request is 85%;

In the third case, the control probe measures -24.7°C and the power request is 97%.



Default Maps and Algorithms

Default Maps and Algorithms

Six complete algorithm maps, or six typical plant configurations, are available.

They are available as .dat files:

No.	Model	type	stage	.dat File name
1	**EWCM 8900-9100-9900 eo**	° C	circuit 1	MskFloatingSuctionDOMINO EWCM eo [°C + circuit 1].dat
2	**EWCM 8900-9100-9900 eo**	bar	circuit 1	MskFloatingSuctionDOMINO EWCM eo [Bar + circuit 1].dat
3	**EWCM 9000 PRO/CO2T**	° C	Low Temperature (LT)	MskFloatingSuctionDOMINO EWCM PRO [°C + LT].dat
4	**EWCM 9000 PRO/CO2T**	° C	High Temperature (HT)	MskFloatingSuctionDOMINO EWCM PRO [°C + HT].dat
5	**EWCM 9000 PRO/CO2T**	bar	Low Temperature (LT)	MskFloatingSuctionDOMINO EWCM PRO [Bar + LT].dat
6	**EWCM 9000 PRO/CO2T**	bar	High Temperature (HT)	MskFloatingSuctionDOMINO EWCM PRO [Bar + HT].dat

Steps to follow

- Identify one of the six available configurations that best fits your plant type (if not available, contact Technical Support)
- Upload the file.dat from TelevisGo, Algorithm parameters page
- Define the number of cabinets/showcases/coldrooms

Table of parameters to be used

Descrizione		EWCM eo	EWCM eo	EWCM 9000 PRO	EWCM 9000 PRO	EWCM 9000 PRO	EWCM 9000 PRO
Numero mappa		**1**	**2**	**3**	**4**	**5**	**6**
circuito / stadio		circuit 1	circuit 1	LT	Ht	LT	HT
regolazione		°C	bar	°C	°C	bar	bar
FloatingSuctionDOMINO							
filter 12	Compressor Rack	EWCM *eo*	EWCM *eo*	EWCM *PRO*	EWCM *PRO*	EWCM *PRO*	EWCM *PRO*
filter 13	Unit of measure	547 - UMCP	547 - UMCP	01.002 - SbP	01.002 - SbP	01.002 - SbP	01.002 - SbP
filter 14	Suction probe	INP40123:4-1	INP40123:4-1	INP00173:2	INP00171:2	INP00173:2	INP00171:2
filter 15	Suction Setpoint	INP40124:4-1	INP40124:4-1	PLA00342:1	PLA003215:1	PLA00342:1	PLA003215:1
filter 16	Compressor Rack	EWCM *eo*	EWCM *eo*	EWCM *PRO*	EWCM *PRO*	EWCM *PRO*	EWCM *PRO*
filter 18	Offset Suction Setpoint	CirC1_SuctionSetpointOffset_C	CirC1_SuctionSetpointOffset_bar	LTrem1	HTrem1	LTrem1	HTrem1
Type_Compressor_Rack	Compressor Rack Type	0 (eo)	0 (eo)	1 (PRO)	1 (PRO)	1 (PRO)	1 (PRO)
Offset_Unit_of_Measure	Unit of measure	0 (°C)	1 (bar)	2 (° C)	2 (° C)	1 (bar)	1 (bar)
Offset_Max	Maximum Offset	2	2	2	2	2	2
Offset_Set_Increase	Offset Increase step	0.05	0.05	0.05	0.05	0.05	0.05
Offset_Set_Decrease	Offset Decrease step	0.05	0.05	0.05	0.05	0.05	0.05
EWCM eo							
547 - UMCP	Suction UM	0 (°C)	1 (bar)	N/A	N/A	N/A	N/A
EWCM PRO							
01.002 - SbP	Unit of measurement	N/A	N/A	2 (° C)	2 (° C)	1 (bar)	1 (bar)
Parameters map							
Nome file	.dat extension	1	2	3	4	5	6

Note

- Default maps are available from Algorithm version 12 onward.
- There is a counter that loads a timeout of 10 minutes, after which time without being refreshed the algorithm HTrem1 and LTrem1 are reset to zero
- It isa protection, for example, if the algorithm crashes, the values are reset to the nominal nameplate values

Watchdog EWCM	FNC00130	Read Only
Suction setpointoffsetEWCM	HTrem1 LTrem1	HTrem1 for Positive Temperature LTrem1 for Negative Temperature
Algorithm version	12	Read Only

Example default map

Take for example the default map number 6, MskFloatingSuctionDOMINO EWCM PRO [Bar + LT].dat
Highlighted in the image below are

1 Cabinet Addresses

Addresses of the cabinets (three in the example)

2 Number of cabinets

26=3 (total cabinets) and 27=1 (1/3 cabinetsin Neutral Zone)

Nr cabinets: 3 (row 26=3 i.e. total cabinets)

Nr cabinetsin Neutral Zone : 1 i.e., about one third of the total (line 27=1 i.e., 1/3 cabinetsin Neutral Zone)

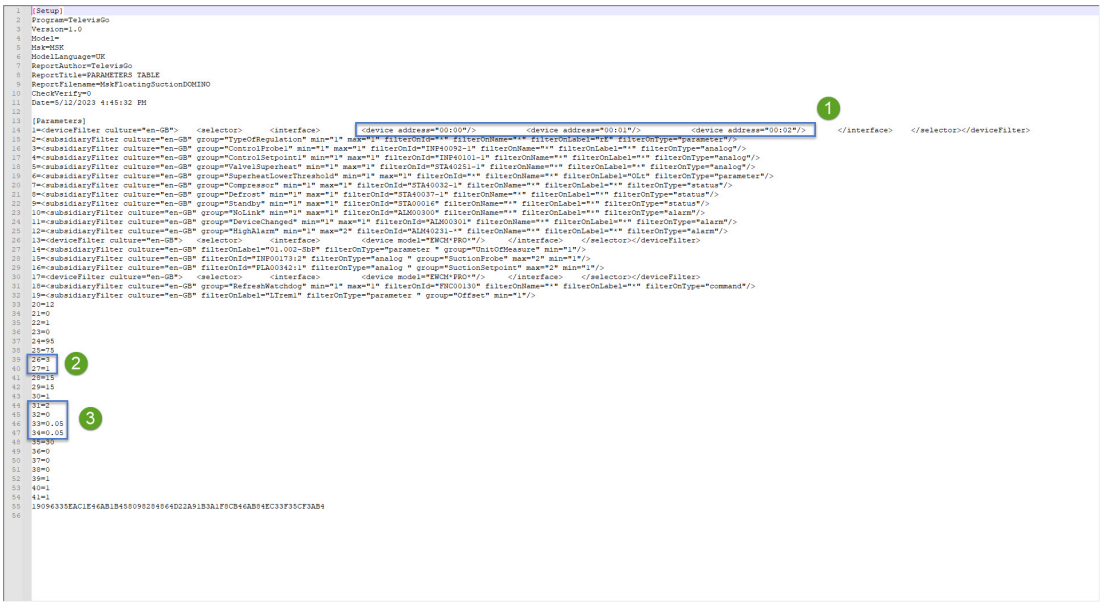
Enter your addresses and set 26 and 27 accordingly

3 Number of cabinets

31,32,33,34 indicate offset_max, offset_min, step increment and step decrement

The factory map is preset

Note.In case of multiple EWCM PROs, the address should be specified, for example 13:00 , 13.01 etc.



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