



# **Quick Guide**

## Supervision and monitoring system





UK

AERNET-Quick Guide\_02

**WARNING**: The pages with the " ④ " symbol at the bottom of the page indicate the new functions of the updated AerNet portal. These pages should be interpreted as a "parenthesis" in the manual, for a purely informational purpose. The entire manual remains valid and it is recommended to follow the order indicated in the table of contents.

#### Illustration of the new AerNet portal functionalities (https://aernet.aermec.com)

This document presents the additions/changes made to the web interface of the Plant Monitoring Web Application (https://aernet.aermec.com).

#### 0) First access to the new portal

When accessing the updated AerNet portal for the first time, the following screen appears, allowing you to download the document summarising the variants that have been introduced (i.e. the document you are now reading):



Figure 1: downloading the new instructions

#### 1) General interface elements

Some general elements of the interface have been repositioned, in particular the menu for accessing functions has been developed horizontally at the top of the screen, in order to leave more space in the central part and thus make it easier to use certain functions, described below.

AERNET & HOME	In NETWORKS 🌰 PLANTS	👹 USERS 🖬 VISUALIZATIO	NS (	Renev	4AL		L Amministratore
							20 🚣 🌲 📋
Label	Profile		Model	Alarms	Network	Status	

Figure 2: new access menu layout

#### 2) <u>Functionality of networks, systems and users</u>

When creating a new user, the new "Visualizations" functionality is available:



Figure 3 - New "Visualization" functionality

In fact, in this new version of the AerNet portal, any "user" or "superuser" who is created **has access by default** <u>to all views of all networks</u> owned by the administrator. Via the new "Visualization" tab, the administrator will have the option of removing access to any particular view:



New L	lser	×
Login Info		
	Visualization	Network
0.		
	ab2ssy2002R2-1 ANL (Modu_Control)-00-AN_LAB	SVILUPPO LIBRERIE
		TestPlant
~	f02txu2001R2-3 NXP(pCOS)-00-125370_NXP1650_Chiller3	
~	bd2sjo2101R2-10 NSi(pCO3)_Mayotte-02-136014_HWFGI2212YALT_Master	TestPlant
~	f02txu2001R2-2 NXP(pCOS)-00-125369_NXP1650_Chiller2	TestPlant
~	bd2sjo2101R2-12 EEV(Carel)-00-136014_EEV_1	TestPlant
~	c60xnu1701R2-2 NRL-NRB-NLC-NYB-NRV-BRB(Heat Pump)-06-122638_NRP2800_Agrate	TestPlant
~	462ujz2002R2-1 NRG(pCOS)-02-662677_NRG0652_Novema	TestPlant
×		TestPlant
~	bd2sjo2101R2-13 EEV(Carel)-00-136014_EEV_2	TestPlant
~	NRG_NOVEMA	TestPlant
~	APBP	TestPlant
~	c60xnu1701R2-1 NRL-NRB-NLC-NYB-NRV-BRB(Heat Pump)-06-122662_NRB2800_Agrate	TestPlant
¥.	592jsx2002R2-198 EEV(Carel)-00-EEv	TestPlant
~	bd2sjo2101R2-11 NSi(pCO3)_Mayotte-02-136014_HWFGI2212YALT_Slave	TestPlant
~		TestPlant
~	592jsx2002R2-1 ANL (Modu_Control)-00-135707_ANL622_Casacorba	TestPlant
~	f02txu2001R2-4 NXP(pC05)-00-125371_NXP1650_Chiller4	TestPlant
	Confirm Cancel	

Figure 4: Display enabling

It should be borne in mind that once one or more slaves have been deleted, the corresponding displays will also be deleted.

#### 3) Sending alarms

In this release, the possibility is given to set up additional e-mail addresses to which alarms can be sent. These recipients will not be visible in the list of users and will not be able to log in, but will only receive e-mail alerts.

To add these new recipients, proceed as follows:

- select the slave you want
- click on the 'Modify' button in the top right-hand corner
- then select the "Alarms" tab and then the "Alarm Notification" button 🔛. The classic alarm notification window opens, with a new icon in the centre 🔤



Figure 5: New icon for entering additional e-mail addresses

• Clicking on the new icon opens a window where you can enter a new e-mail address

Add User	By Email		×
E-Mail *			
	Confirm	Cancel	

Figure 6: Email compilation

By clicking on confirm, the recipient is added. It is of course always possible to remove it at any time.

#### 4) Manage Profiles

In this version, several changes have been made to the "Manage Profiles" area to improve the usability of the "Aernet Pro" interface. Let's see in detail.

#### Manage Templates

The interface is very similar to the previous one; the available templates are listed, with the revision and source file indicated:

									×
1. Manage Template									
Available Templates	Show	v All Versions			Configured Profile				Ø
Name -	Revision	Template			Slave ID	Slave Name	Name	Revision	
ANF (Modu_Control)-00		ANF (Modu_Control)	-						
ANK (Modu_Control)-00		ANK (Modu_Control)							
ANL (Modu_Control)-00		ANL (Modu_Control)							
ANLi100 (Modu_Control)-00		ANLi100 (Modu_Control)							
ANLi20-70 (Modu_Control)-00		ANLi20-70 (Modu_Control)							
ANLI21-81 (Modu_Control)-00		ANLI21-81 (Modu_Control)							
ANR (Modu_Control)-00		ANR (Modu_Control)							
EEV(Carel)-01									
EEV-TWIN(Carel)-00		EEV-TWIN(Carel)							
ENERGY-METER-IME_MFD4421-00		ENERGY-METER-IME_MFD4421							
EXD-TEVI-00				0					
MC-EVO-00				•					
MULTICHILLER-00									
MULTICHILLER-EVO-02									
MULTICHILLER-VPF-00									
MULTICONTROL-00									
NCD(pCO5)-00									
NRG(pC05)-03									
NRL-NRB-NLC-NYB-NRV-BRB(Chiller Only) - 60Hz-00		NRL-NRB-NLC-NYB-NRV-BRB(CP	niller Only) - 60Hz						
NRL-NRB-NLC-NYB-NRV-BRB(Chiller Only)-09		NRL-NRB-NLC-NYB-NRV-BRB(Ch	niller Only)						
NRL-NRB-NLC-NYB-NRV-BRB(Freecooling)-09		NRL-NRB-NLC-NYB-NRV-BRB(Fr	eecooling)						
NRL-NRB-NLC-NYB-NRV-BRB(Glycol Free)-09		NRL-NRB-NLC-NYB-NRV-BRB(G	ycol Free)						
NRL-NRB-NLC-NYB-NRV-BRB(Heat Pump)-08		NRL-NRB-NLC-NYB-NRV-BRB(He	at Pump)						
NRL-NRB-NLC-NYB-NRV-BRB(Recovery)-08		NRL-NRB-NLC-NYB-NRV-BRB(Re	coverv)						-
							Cancel B	ack Next Fi	nish

Figure 7: "Manage templates" screen

Once the template (or templates) to be imported has been chosen and the various required parameters (name, modbus address, etc.) have been set, two new icons are active:

Modbus Provisioning							×
1. Manage Templat							$\sum$
Available Templates	Show	All Versions		Configured Profil			<b>d C</b>
Name	Revision	Template		Slave ID	Slave Name	Name	Revision
ANF (Modu_Control)-00		ANF (Modu_Control)	^	1	AN_LAB	ANL (Modu_Control)-00	00
ANK (Modu_Control)-00		ANK (Modu_Control)					
ANL (Modu_Control)-00	00	ANL (Modu_Control)					

Figure 8: Manage Templates, Additional functionalities

The icon allows the newly imported (or already present) modbus slave to be deleted: please note that once one or more slaves have been deleted, the corresponding displays will also be deleted.

The icon allows all settings of the slave that has been created to be changed, including the modbus address.

Continuing the procedure leads to the next step, Configure Profiles.

#### **Configure profiles**

The interface is identical to that of the previous version, except for the presence of the "Copy" icon:

Modbus	Provisi	oning													$\wedge$
		1. Manage Templates					2. Co	nfigure P							X
AN_LA	B - ANL (M														~ &
			Sample Rate		peed 19200	arphi Data	Bits 8		Parity N	Stop Bits 2	v Prote	col serial			
	Address					Delta Log									
		tuA - Water output temperature												Multiple	
		tSb - Coil temperature							Analog	Holding	16 bit		Read	Multiple	

Figure 9: Configure Profiles, Copy icon

By clicking on the fill icon, it is possible to copy all settings of the current slave profile, including the enabled registers, to a second slave profile (of the same template) provided it was previously loaded with the "Manage Template" functionality:



Figure 10: Copy Family functionality

Copying takes place from the "Source" family to the "Target" family. By pressing Yes the two slave profiles will be exactly identical, except for the address.

Continuing the procedure takes you to the next step, **Configure AerNet Pro** 

	1. Manage Templates		2. Configure Pro	files		3. Configure Aernet Pro	
N_LAB - ANL (	(Modu_Control)-00 rev. 00						
tive Registers	s (117)				Configurations (31)		
Address	Name	Type	Permission		O Quick Command		
					1 ON/OFF Sistema		001
	2 tiA - Water input temperature	Analog	Read		1 ON/OT SIStenia		
	3 tuA - Water output temperature		Read		2 Modo di funzionamento	101	1 U I
	4 tSb - Coil temperature						
	5 tGP - Force gas temperature	Analog					
		Analog					
	11 SAb - Safety band on force-off						
	14 HCO - Primary cp operation hours (uni						
					-		
					🕫 Reset		
	15 SPO - Primary compressor pickup curre				Parameters		
					章 Set point		
					A Configurator		
	25 SP1 - Auxiliary compressor pickup curr	ent (u Analog					
	54 tEr - Percentage thermostat required p						
	21 dCP - DCP pressure differential						

Figure 11: Interface Configure Aernet Pro

#### **Configura Aernet Pro**

The areas Quick Command, Reset, Setpoint and Configurator remained unchanged. The Status and Series areas were merged into "Parameters". "Histogram" has been removed



When creating the Aernet Pro interface, there is the possibility to choose up to 20 parameters in "read" or "read/write" to be presented on the Aernet Pro summary window. When they are chosen and brought to the right, it is possible to choose whether or not to graph them, MAXIMUM 10 PARAMETERS, by means of the appropriate flag. Please note that some of them will normally be present on both the summary and the graph, because they are already preset. They can of course be removed and/or modified.

Also in this step, you can use the 'Copy' function 🙆.

		1. Manage Templates		2. Configure F	Profiles		3. Configure Aernet Pro	
I_LAB - ANL	(Modu_(							
tive Register	rs (117)					Configurations (31)		
ddress		Name	Туре	Permission		O Quick Command		
						O Reset		
		tiA - Water input temperature	Analon	Read		A Parameters		
		tuA - Water output temperature	Analog	Read		1 tuA - Temperatura uscita acqua		
		tSb - Coil temperature				2 tiA - Temperatura ingresso acqua		
		tGP - Force gas temperature	Analog			3 tAE - Temperatura aria esterna		
		tAE - Outside air temperature	Analog			4 SEt - Set attualmente in uso		
			Analog			5 AP - Pressione di mandata		
						6 bP - Pressione di aspirazione		
						7 MPOE		
						8 CP		
						9 MV1-2 / MPOC		
						10 Alarm summary		
						莘 Set point		
						A Configurator		
		tEr - Percentage thermostat required power						
		dCP - DCP pressure differential						

Figure 12: Configure Aernet Pro, parameter assignment to display

Once this step has been completed, pressing the **Finish** button returns you to the Plants e Parameters window, from which you can choose the standard Aernet Pro view, which will appear as follows:



Figure 13: new AerNet Pro interface display

Below is an explanation of the new AerNet Pro interface.



- The table you see with the 20 parameters under "Summary" is dynamic, i.e. it updates every 30 seconds.
- Data in the table that are not graphed appear in white, while those that are graphed appear in the colour of the corresponding series in the graph.
- Using the tick marks, it is possible to remove/add parameters (maximum 10), which are then updated on the graph by pressing the button.
- The labels below the graph are retained, allowing the series to be quickly removed or put back in or highlighted.
- The graph is dynamic, by default it shows the last hour of operation and allows zooming using the mouse, as with the graphs constructed in the "Visualizations" menu. It remains possible to manage display intervals, as usual.
- If one of the parameters is of the Digital or Coil type, the graph adjusts to a dual display, with the analogue tracks at the top and the digital tracks at the bottom, similar to the "Tandem chart" display.
- The three "Toggle" type buttons remain, allowing you to execute some quick commands (e.g. machine On/Off, season change and alarm reset)
- Setpoints are available in the dedicated "Set Points" form:

	NETWORKS 🙆 PLANTS 🔮	USERS 🔟 VISUALIZAT
Plants and Parameters Visualization ab2		-AN_LAB × <b>¢ 1 hour</b> © v <b>→</b> Fro
Summary Set Points		
StF - Summer Setpoint	7.0°c	30.0
StC - Winter Setpoint	<b>45.0</b> ℃	25.0
bnF - Cooling band	5.0°c	20.0
bnC - Heating band	<b>5.0</b> °c	
SF1 - Summer Setpoint 1	<b>12.0</b> °C	0.0 11:35
SF2 - Summer Setpoint 2	<b>7.0</b> °c	tSb - Coil ter
SC1 - Winter Setpoint 1	<b>45.0</b> ℃	0 11:35

Figure 14: Set Points edit window

#### 5) Data retention

In order to make AerNet's data cloud platform more efficient, while saving a little money during subscription renewal, the new AerNet platform provides the following time windows for the retention of recorded data:

- The retention time of averaged data (an average data every hour) is reduced to 3 months (previously it was one year)
- The retention time for point data, i.e. data recorded at the highest possible resolution, remains unchanged, one week.

### AerNet Web Application – Quick Guide

#### **1** Introduction

This document describes the basic AerNet configuration procedure in order to connect one or more remote control slaves.

The following operations should be performed after successfully installing AerNet in mechanical/electrical terms and connected to internet (via Ethernet / 3G; refer to the installation manual provided in the kit).

Bear in mind that, for the complete description of all AerNet platform functions, you should consult the "AerNet Web Application – Full Guide" manual which is also available on the Aermec website. This Quick Guide will help you commission the product but it is obviously not exhaustive.

#### 2 What is needed?

The user must have a **Personal Computer** or **Tablet** with Internet access in order to complete AerNet activation on the cloud portal. Make sure that the sheet with the **AerNet activation codes** supplied inside the Kit is close at hand.



#### 3 Before starting ...

There follows an example for creating a base system comprising a single Aermec chiller. Before proceeding, it would be useful to summarise a number of basic concepts referred to in the document that are part of the AerNet platform.

- *AerNet*: the physical device connected to the machines being monitored via the RS485 serial connection
- *Plants*: the physical, individual AerNet systems registered on the Cloud AERNET platform, connected to the individual modbus slaves (each Aermec device has a RS485 port)
- **Networks**: A "Network" is a logical combination of one or more plant systems. This combination can be used to group plant systems on a geographical basis (all plant in Lombardy are listed in the "Lombardy" Network) or in accordance with another classification suitable for managing the equipment pool. Each network can be associated with a geographical map that identifies the location of plant systems.
- **Users**: the people who use the AerNet service. There are different types of user:
  - <u>Administrator</u>: the owner of AerNet who can administrate all the functions of the platform. The administrator owns one or more networks and can configure and set individual plant systems, create displays, create users associated with networks and enable specific views for users. Other "SuperUser" and "User" can also be created.
  - <u>SuperUser</u>: A SuperUser has access in the network concerned to a number of Administrator functions. Entered by default as the person receiving all alarm notifications
  - <u>User</u>: may only access displays for the network / plant system in question for which the Administrator has associated with the user. Only receives notification of those alarms for which the Administrator has enabled in the list of basic role notifications
- *Visualizations*: The various views whereby users have access to the data collected by the platform are called "Visualizzazioni". AERNET offers many kinds of "Graphic Widget" (graphic, multi-value graphic,



tables, histograms, etc..). A display may contain on or more Widget. It is important to bear in mind that for each plant installed a display is created by default called "**AerNet Pro**": it is a synoptic panel used to display the current status of the plant, implement commands and make certain set-points.

#### 4 Launch Web Application

#### 4.1 Initial Check

Make sure that AerNet is powered up: if everything is OK, the "ON" LED must be ON and, if correctly visible in Internet, also the "US1" LED.

#### 4.2 Launch Web Application AERNET

From any PC or Tablet connected to Internet, open any Browser and type in the address: "aernet.aermec.com". The following page opens:

WELCOME	AerNet
User Name	
Password	
Don't have an account? Sign up here !	

Figure 1: Login page

If you are already registered, enter your User Name and Password. Otherwise complete the registration procedure by clicking on "Sign up here!". The following window opens:



Figure 2: registration pages



AERMEC

/!

Fill out all the compulsory fields (those marked with an asterisk). Filling out the remaining fields is discretionary. Some technical notes:

- The user name and password must have at least 8 characters
- The perform registration, the Administrator must enter the two 12-character codes provided in the (Serial Key, Activation Key) sheet, <u>upper/lower case must be observed</u>. The first code refers to the serial code of the AERNET Router indicated on the label affixed to the side of the apparatus. The second code is a unique key for the apparatus that enables activation.
- The conditions of use must be accepted by ticking the relative box (they can be downloaded by clicking on the link "Download disclaimer")
- You must enter the reCAPTCHA codes displayed

Once everything has been correctly compiled, the following window appears:

REGISTRATION COMPLETED		AerNet
You'll receive in the mail a l	ink to activate your account	
Login	Registration	Forgotten Password

#### Figure 3: registration page

indicating the procedure has been completed correctly. Check your email box to see if the service activation confirmation email has been received: activate the registration by clicking on the specific link. The following window opens:

YOUR ACCOUNT HAS BEEN ACTIV	ATED	AerNet
You can make a login with		
Login	Registration	Forgotten Password

#### Figure 4: activation completed

It is now possible to proceed with login. The following window appears:

AerNet					AE	RNET		
lack Frest								1 2 4 8 7 9
PLANTS	Label	Profile	Model	Alarms	Network	Status		
USERS								
W VISUALIZATIONS			AerNet					

#### Figure 5: "Plants" page

It depicts the plant created by the current Administrator user which, at the time, only match the AerNet Router.



. Click on it and

#### 4.3 Creating Plant

Click on the line to highlight it. This button then appears bottom right the following window opens:

I. Hanings Lengelates     Scientizate     Scientizate     Scientizate       Name     Nature Anno     Districutor     Scientizate       Name     Anno     Districutor       Name     Ontidante Anno       Name     Ontidan	odbus Provisioning				×
Analabile Templates         Show All         Confliqued Partieles           name         notation         0           ande (bace_controp-do)         00         0           bace/controp-do)         00         0           tark-doi         00         0           tark-doi         00         0           controp-do)         00         0           tark-doi         00         0           controp-do)         00	1. Hanage Templates				net Pre
Name         Notion         Name         Notion           Andersontrony Gal         GG         <					
Amic Hoda, Controlp 60     00       DD-TD-76-76     00       Mic KHO 60     00       Mic KHO 60     00       Mic KHO 60     00       Mic KHO 70     00 </th <th></th> <th>Revision</th> <th></th> <th>Narae</th> <th>Revision</th>		Revision		Narae	Revision
B0-TB2-64 MPC 40-30 MPC 40-30 MPC 40-30 MPC 40-30 MPC 40-30 AND (MPCT) -01 AND (MPCT) -01 C C					
Mc (tro, do)     00       Mark (do)     00       Mark (do)     00       Analo (set2) (4)     01					
ANAK 400     01       MAR 400     00       MAR 400     00       ANAK (MCC) 91     01					
Nation         00           Unix any         00           Anno (unital) e1         01					
(Interior)         0)           Attice (Intercipted)         0)           C         C					
AKK (sefCi) 41 © ©					
e					
				Cancel	Back Next Finish

Figure 6: assigning family

This window enables the Administrator to add and configure one or more modbus slaves on the AERNET Router selected, using a wizard to guide the configuration procedure for an actual plant installation. The steps in the wizard are as follows:

1. **Manage templates**: it is used to configure new effective plant connected to the AERNET Router (by configuring a new modbus slave) selecting the related Product Family and/or removing an Effective Plant (by eliminating the relative modbus slave).

2. **Configure profiles**: it is used to disenable/enable, for a configured plant, some of the parameters envisaged in the mapping of the Modbus parameters for the Product Family used.

3. **Congigure Aernet Pro**: it is used to configure or modify the parameters associated with the various sections of the AerNet Pro display and the icons used.

Steps 2) and 3) can therefore be used for the initial configuration of an Effective plant as a slave for an AERNET Router as well as at a second stage for an already activated plant.

Bear in mind that all the operations performed over the various steps of the "Manage profiles" wizard are only applied when the "Finish" button is clicked in the third step. If you do not wish to apply a modification, simply leave the wizard by clicking on the "Cancel" button.

Now select, from the list on the left, the family matching the machine to be monitored and link it to the plant installation using the right arrow . The following window appears:

- Slave Name: compulsory field. enter an ID for the machine (for example NRK0700)
- Slave ID: compulsory numeric field. The ModBus address of the card to be monitored.
- Sample Rate: compulsory field. The period (in seconds) while the AERNET Router reads the slave's parameters. This data is pre-set for each family of parameters and is normally assured. If several slaves are added to the same network, AerNet may ask for it to be increased to ensure correct reading.
- The other 4 parameters (Speed, Data bits, Parity and Stop Bits) are pre-set and refer to the library; they normally do not require modification.







Press "Confirm" and then	"Next".	The following window opens:
--------------------------	---------	-----------------------------

Mod	bus P	rovisio	ning												×
-			1. Manage Templates				2. Configu	re Profiles							
	NRK07	00 - NRK-0	00 rev.: 00-												
			Sample	Rate 10	Sp	eed 19200	🗸 🗸 🗸 🖉	lits a 🖂	Parity N		Stop Bits 2				
															a (
			SUW - Outlet Temperature water evaporator									Holding			8
			SIW - Inlet Temperature water evaporator								Analog				R
															8
												Holding			8
			TAP2 - High pressure circuit 2								Analog				R
															R
			TAE - External Temperature								Analog	Holding			R
			SL1 - Liquid Temperature circuit 1								Analog	Holding			R
											Analog				R
			Multifunction Input								Analog				R
			SUW com - Outlet temperature common evap.									Holding			R
															R
											Analog	Holding			R
											Analog				R
			DeltaP low pressure circuit 1 high resolution								Analog	Holding			R
			Average low pressure circuit 2 high resolution								Analog	Holding			R <mark>Y</mark>
				<.						CONTRACTOR IN		and the second			
												1	Control No.	ale North	Children
													currer Da	THE MERT	

#### Figure 8: Configure profile

All parameters are listed in table form for the Product Family linked with the slave. The family as such <u>includes all</u> <u>available parameters</u>.

On this page, it is possible to select only those parameters effectively managed for the plant by ticking them on or off ( ) in the first column of the table. This eliminates all data not required by the type of plant in question so that data acquisition is more streamlined and effective. Click on the selected.



After selecting the required list of parameters, proceed by pressing the "Next" button. The following window appears:

	1. Manage Templates		2. Configure Pro	ofiles		3. Configure Aernet Pro
NRK0700 - N	RK-00 rev. 00					
ctive Regist	ers				Configurations	
Address	Name	Туре	Permission		🙃 Status	
					Circuit 1 power	
	SUW - Outlet Temperature water evaporator     STW - Enlet Temperature water evaporator     TAP1 - High pressure circuit 1     TOUL	Analog			Circuit 2 power	
		Analog			Alarms summary	
		Analog				
				100	O Reset	
				0		
				$\odot$	LM Histogram	
		Analog				
	24 Software Version					
			Read			
				<b>V</b>		

Figure 10: Configure Aernet Pro



On the third page of the wizard it is possible to configure the details of the parameters shown in the "AerNet Pro" display for the plant. AerNet Pro is a default summary configuration with pre-set parameters for each type of machine (family) available on the AerNet portal. If necessary, they can be modified. The sections available in the widget Aernet Pro are as follows:

• **Status**: **3** parameters indicating plant status.

- 🕛 Command: 2 digital read/write parameters linked to buttons that perform commands (toggles).
- 😢 Reset: 1 digital Reset parameter
- Series: 6 parameters in graphic form in a multi-track report and listed in a table
- **Histogram**: **1** parameter depicted by a histogram
- **Setpoint**: 8 settable Setpoint parameters (Read/Write)

The **Command**  $\bigcup$  and **Reset**  $\bigotimes$  sections are linked to default icons that can be swapped as required with others available that can be selected by clicking on the icon in question.



The "Active registers" column on the left is used to select from list the parameters managed for the plant in question and, using the central arrows () assign them to the various sections of the "Aernet Pro" display. The "Configuration" column on the right is used to select the parameters linked with the various sections of the "Aernet Pro" display in order to remove them from the section ().

It is also possible to configure the icons associated with certain commands.

If the choices made are complete, simply click on the "Finish" button. All the operations performed using the wizard are then applied, i.e. the configuration of a new plant or the modifications made to an existing plant. **Everything is then sent to the AERNET Router that re-confirms them with the system**. After a few seconds, if everything is OK, led US2 comes ON on AerNet, which then begins to request ModBus data from the slave (the Tx and Rx LEDs begin to flash in alternation).

A window similar to the one below appears:

Plan	ts and Parameters						
	Label	Profile	Model	Alarms	Network	Status	
				Show All		Show All	
	610opp1601R1		AerNet		First Installation	Activated	
2	610opp1601R1-1	NRK-00-NRK070			First Installation	Activated	

#### Figure 11: Plant activated



#### 4.4 Plant view

On selecting the effective plant just created in the "Plants" section, a window similar to the one below appears:

AerNet						AER	NET				
Jack Frost -									2	2.8 = /	- 4
A NETWORKS		Label	Profile	Model	Alarms	Network	Status	2 610opp1601R1-1			
M HIGHTS								_d Measures			
	1	6100pp1601R1		AerNet		First Installation	Connected	M Visualizations			
	2	6100pp1601R1-1	NRK-00-NRK0700			First Installation	Connected	Alarms			
								Alarms summary		Dec 2, 2016 8:20:18 4	AM
								AL40 - Evaporator antifreeze alarm		Dec 2, 2016 8:20:18 #	44

#### Figure 12: Plant selected

The right hand part of the display has the following fields:

- Code serial key: this is the serial key for AerNet, to which the suffix matching the serial address of the slave is added.
- Measures: see below
- Visualization: see below
- Alarms: if any alarms are active in the plant, they are listed here with the date and time.

		2	*	<b>A</b>	Ŵ	ø	4
	♣ 610opp1601R1-1						
1	Il Measures						
1	🔟 Visualizations						
->	Alarms						
11	Alarms summary	Active			8:20:1	8 AM	
	AL40 - Evaporator antifreeze alarm	Active			8:20:1	8 AM	
	AL32 - Circuit 1 high pressure switch alarm	Active	Dec 2,			3 AM	

Figure 13: Plant selected

#### 4.4.1 Measures

Click on "Measures" .... to open a list of values: they match the sizes of the **AERNET Pro** display, as shown in the figure below:

2 🛃	. 🜲 💼	ø	4
<b>₽</b> 610opp1601R1-1			
Il Measures			
SUW - Outlet Temperature water evaporator	26.2	°C	
SIW - Inlet Temperature water evaporator	26.1	°C	
TAP1 - High pressure circuit 1	26.8	bar	
TAP2 - High pressure circuit 2	34.8	bar	
TAE - External Temperature	19.8	°C	
Current plant setpoint	26.1	°C	
Active power plant (0100)	0.0		
Circuit 1 power	0.0		
Circuit 2 power	0.0		
Plant heating differential	5.0	°C	
Plant cooling differential	5.0	°C	
Setpoint 1, Summer	7.0	°C	
Setpoint 2, Summer	12.0	°C	
Setpoint 1, Winter	45.0	°C	
Setpoint 2, Winter	40.0	°C	ľ
Lul Visualizations			
Alarms			

#### Figure 14: display of measures

bear in mind that this data is a snapshot of the last reading taken, i.e. they are not dynamic.



#### 4.4.2 Visualizations – AerNet Pro

Click on "Visualizations" **I** to open a list of the possible displays available for the plant. Each new plant has a default AerNet Pro display available. Numerous other displays can also be created (consult the complete manual).

	2 🚣 🖡 🔟 🖋 🎙
	<b>20</b> 610opp1601R1-1
Click on the visualization available	Il Measures
to open the default "AerNet Pro" page, as	Lat Visualizations
show in figure 16 below:	G100pp1601R1-1 NRK-00-NRK0700
	Alarms

Figure 15: list of available visualizations



Figure 16: Visualization - AerNet Pro

This is the "AerNet Pro" display summarising the plant created automatically on assignment of **each** plant to AerNet. Its functions are briefly outlined below.



#### 4.4.2.1 AerNet Pro: "Summary" section

- Status: 3 parameters indicating plant status Circuit 1 status Circuit 2 status **Command**: 2 digital read/write parameters linked to buttons Alarms summary Deactive that perform commands (toggles). These are normally two ON/OFF and Change Season commands. A green symbol indicates that the machine is ON; a red symbol indicates General system On/Off ٢ that the machine is OFF. The SUN symbol indicates that the machine is operating as a heat pump, while the ICICLE symbol indicates cooling operation Summer / Winter setting Alarms / Reset: if one or more alarms are presents, the bell Alarms / Reset
  - can be activated; click on it to open a pop-up summarising the active alarms and reset them after the warning message.

Figure 17: Summary

#### 4.4.2.2 AerNet Pro: "Set Points" section

8 modifiable fields are available for 8 setpoints on the machine. If they are not present, the "N.A." appears and the field cannot be edited.

Control Set Point Sun	nmer setpoint	1			Ľ
Summer setpoint 1					
CLI produce anum					
07.50			08:20 edpoint 1 (*C)		
Change Set Point/Function					
		Clo	sc		

Figure 19: Modification Set Point



Figure 18: Set Points



#### 4.4.2.3 AerNet Pro: "Chart" section

The "Chart" section essentially comprises three sectors: the first is a multi-track graphic that may contain no more than 6 sizes; the same sizes are then indicated in the form of instant values in the table bottom right. The section bottom left shows a histogram for a single size depicting its average value based on the set time.



#### Figure 18: AerNet Pro Chart



#### Figure 19: Time settings

Click on the eye symbol again to return to the dynamic display of the last hour.



#### 4.5 Functionality

Over and above the details given in the previous paragraph, selecting a line matching a plant activates the various icons top right, thereby enabling the following functions:

AerNet						AER	NET				
12							-				
Jack Frost -											
W HOME										2	****
A PLANTS		Label	Profile	Model	Alarms	Network	Status		n 610app1601R1-1		
W USERS					Show All 🕤		Show All				
W VISUALIZATIONS	1	610opp1601R1		AerNet	11944	First Installation	Connected		M Visualizations		
	2	610opp1601R1-1	NRK-00-NRK0700			First Installation	Connected	_	Alarms		

Figure 20: Plant selected

• 📩 Export



- 🔊 Modify plants
- **4** Activate plant

#### 4.5.1 Export

Click on the "Export" button to open a pop-up where it is possible to download the last seven days of data collected for <u>all</u> plant parameters.

Export 610opp16	01R1-1	
Order Format Time Interpolation	Ascending Descending     Excel CSV All All IS Minutes	
	18 Export Cancel	

Figure 21: Export page

The following features can be set:

- Order: set the time order for samples (Up, Down)
- Format: set the format of the export file (Excel, CSV Comma Separated Values)

• **Time interpolation**: Sets the timing for exports of samples. Click on the field to open a combo list where various options can be selected:

• All: the parameters are depicted as collected from the System (raw data), indicatively in accordance with the Modbus readout frequency set on the slave

- 15 Minutes: samples are merged into a single data every 15 minutes
- 1 Hour: samples are merged into a single data every hour
- 1 Day: samples are merged into a single data every Day

Click on the "Export" button to perform the operation. A file is created that can be used at a later stage. The "Export" function is performed as a "batch operation", i.e. the user can continue to work on the interface. When



the result is ready, the user is notified by an "Export Finished" pop-up containing the name of the file exported. Click on the name of the file to download it to the user's PC:

Export Finished	×
<b>±</b> 610opp1601R1-1_02-12-16_08.12.32_02-12-16_09.02.45_	.xls

#### Figure 22: Download data

#### Warnings:

- The "Export" function makes high demands on the System. It is advisable not to use it too often. An export request may not be completed until the previous one is terminated.
- The times between the download request and the availability of the result depend on many factors (number of plant parameters, frequency of Modbus readout, Time Setting chosen) and may range from one minute to several dozen minutes.
- Export files may ben be several dozen MBs in size and times for download to PC may also depend on the network.
- Exporting raw data (Time interpolation chosen = All), given the dimensions, is divided into a file per day, that are then grouped and compressed in "\*.zip" file.

#### 4.5.2 Alarms

Click on the "Alarms" button to open a "Alarms" pop-up listing notified plant alarms. The last 30 notified events are listed (divided between alarm event and alarm reset).

#### 4.5.3 Modify plant

Click on the "Modify plant" button to open a pop-up displaying the configuration of the plant where certain values can be set.

Modify Plant					
General Location P	arameters	Alarms	Remote Control	Last Measures	
Serial	610opp160	1R1-1-5938	85		
Activation Code					
Label *	610opp160	1R1-1			
Model					
Firmware Version					
Production Date		6			
Inactivity Control	○ No ● Ye	es			

#### Figure 23: Modify plant

Various cards are available; this manual will focus on the following cards:

#### Card - "General"

The "General" card lists plant database information. In this form, values are given to the following data:

- **Serial**: serial number of the Effective Plant. It starts with the Serial N° of the AERNET Router where it is configured, followed by the number of the modbus slave and a number generated automatically by the System. It is the key used by the System to manage plant information.
- Label: Compulsory field, can be modified. It is possible to assign a plant label (code).



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• **Production date**: date when the AERNET Router slave connected to the effective plant was created using the "Manage profile" function.

• Inactivity control: If set to "Yes", inactivity control is activated for the plant. When the plant no longer communicates with the system for more than 15 minutes, for various reasons such as communication or operating problems, this is signalled on the interface by an "OFF\_LINE" alarm  $\rightarrow$ 

Modify	/ Plant				
General				Remote Control	Last Measures
Seria		610opp16	181-1-593	85	
50110		orcoppro	511(1 1 555		
Activa	ation Code				
Label		610opp16	01R1-1		
Mode	I				
Firmv	vare Versio	on			
Produ	iction Date	e 🛗 12/2/1			
Inact	ivity Contro	ol ONo 💿 Y			

Figure 24: Modify plant, General card

#### "Location Card"

The "Location" card lists plant geolocation information. In this form, the following data is available:

- Address: descriptive field.
- Latitude / Longitude: contains the latitude & longitude coordinates that can be set using this form or by positioning the plant bookmark on the geographical map ( $\rightarrow$  para 4.6)
- Elevation: can be set.

Modify Pla	ant
General Loc	ation Parameters Alarms Remote Control Last Measures
Address	
Latitude	0
Longitude	0
Elevation	0
Elevation	0

Figure 25: Modify plant, location card

#### "Alarms Card"

The "Alarm" card lists the Alarm parameters that can be set for the plant

							×
						49 🐸	
Label			Priority	Alarm Thresholds	Delay Alarm (minutes)	Repeat Alarm (minutes)	
Alarms summary							
AL38 - Evaporator flowswitch alarm	٠	18		Digital Threshold:UP			
AL24 - Evaporator pump 1 thermal alarm		III B		Digital Threshold:UP			
AL25 - Evaporator pump 2 thermal alarm		ł		Digital Threshold:UP			
AL26 - Fan 1 thermal alarm				Digital Threshold:UP			
AL29 - Fan 2 thermal alarm		I	Urgent	Digital Threshold:UP			
AL40 - Evaporator antifreeze alarm		III R		Digital Threshold:UP			
AL31 - Circuit 1 low pressure alarm		H	Urgent	Digital Threshold:UP			
AL65 - Circuit 2 low pressure alarm			Urgent	Digital Threshold:UP			
AL34 - Circuit 1 low pressure serious alarm		1		Digital Threshold:UP			
AL35 - Circuit 2 low pressure serious alarm							
	earl Location Parameters Alarms Remote Control Label Show All Alarms summary AL36 - Evaporator flowswitch alarm AL36 - Evaporator pump 1 thermal alarm AL36 - Evaporator pump 2 thermal alarm AL36 - Evaporator pump 2 thermal alarm AL36 - Fan 1 thermal alarm AL36 - Fan 1 thermal alarm AL30 - Fan 2 thermal alarm AL30 - Fan 2 thermal alarm AL30 - Carcuit 1 low pressure alarm AL40 - Evaporator antifreeze alarm AL51 - Circuit 1 low pressure alarm AL54 - Circuit 2 low pressure alarm AL54 - Circuit 2 low pressure alarm	Label	Label - Location Parameters Alarms Remote Control Last Measu Label	Location       Parameters       Alarms       Remote Control       Last Measures         Label       •	Location       Parameters       Alarms       Remote Control       Last Measures         Label       •       •       Priority       Alarm Thresholds         Show All       •       •       •       Biological ThresholdsUP         Alarms summary       •       •       •       Biglial ThresholdsUP         Al24 - Evaporator pump 1 thermal alarm       •       •       Urgent       Digital ThresholdsUP         Al25 - Evaporator pump 2 thermal alarm       •       •       Urgent       Digital ThresholdsUP         Al26 - Evaporator pump 2 thermal alarm       •       •       Urgent       Digital ThresholdsUP         Al27 - En 2 thermal alarm       •       •       Urgent       Digital ThresholdsUP         Al36 - Evaporator pump 2 thermal alarm       •       •       Urgent       Digital ThresholdsUP         Al37 - En 2 thermal alarm       •       •       Urgent       Digital ThresholdsUP         Al30 - Circuit 1 low pressure alarm       •       •       Urgent       Digital ThresholdsUP         Al36 - Circuit 2 low pressure alarm       •       •       Urgent       Digital ThresholdsUP         Al31 - Circuit 1 low pressure alarm       •       •       Urgent       Digital ThresholdsUP         Al35 - Circuit 2	Index       Priority       Narm Thresholds       Delay Alarm (minutes)         Isbert       -	Alaren summary Alaren A

Figure 26: Modify plant, Alarm card



Click on the bell, for each alarm, to disenable readout (i.e. the alarm is ignored  $\rightarrow \swarrow$ ), or only prevent its notification (i.e. the alarm is read and considered but notifications via e-mail are not sent  $\swarrow$ ). By default, all alarms are considered and notified.

Select an alarm and click on the pencil *reverse* to open the corresponding settings page, where it is also possible to change the alarm send priority, reverse the threshold (<u>do not use</u>) and set any repeats and delays.

Μ	Modify Alarm Thresholds AL38 - Evaporator flowswitch alarm ×					
		Enable Alarm     Enable Notifications				
	Priority	Urgent				
	Digital Threshold					
	Delay Alarm (minutes)					
	Repeat Alarm (minutes)					
		Confirm Cancel				

Figure 27: Alarm settings

Select an alarm and click on "Alarm notification" **\*** to open the corresponding settings page, where it is also possible to define which users will receive an alarm notification by e-mail.

Alarm Notification						×
👹 Users						
Filter Plants Usemame, Em				Users		
Users from Network First Inst	allation			Username	Email	Name
Username	Email	Name				
User_Third	User_Third@aermec.com					
				Administrators		
				Baldoinsre	gbaldoin@gmail.com	Jack Frost
				User_Second	User_Second@aermec.com	
		Con	tinue	Close		

Figure 280: Alarm Notification

For the "Add Users" procedure, please see the complete manual (AerNet Web Application – FULL GUIDE).



The "Users" column on the left lists the user-base not associated with the alarm notification. The "Users" column on the right lists the user-base associated with the alarm notification.

Click on the list on the left to select a user and use the central arrow ( ) to associate this user with the alarm notification.

Click on the list on the right to select a user and use the central arrow ( ) to de-select this user for alarm notification.

The bottom part of the "Administrators" column on the right lists the network administrator and the list of network users and super-users. By default, alarm notifications are sent to the Administrator and all network "super-users".

The events notified are:

- Occurrence of an alarm
- Re-entry of an alarm
- Reset of an alarm
- Occurrence of an inactivity alarm
- Re-entry of an inactivity alarm

#### "Remote control Card"

The "Remote control" card displays all the parameters that may be written remotely that correspond to Write o Read/Write parameters (setpoints, commands, reset, etc.)

M						
Ger						
						17 /
	Label	* Туре	Threshold	Value	Measure Unit	
6						1
1	Plant heating differential	Analog				
	Plant cooling differential					
	Setpoint 1, Summer		Min:-20, Max:20			
	Setpoint 2, Summer		Min:-20, Max:20			
	Setpoint 1, Winter		Min:30, Max:65			
	Setpoint 2, Winter		Min:30, Max:65			
	Plant On/Off Mode					
8	Mode selection (Summer/Winter)	Integer				
_						

Figure 291: Modify plant, remote control card

Select a parameter and click on the modify icon (  $\mathcal{P}$ ) to open a pop-up enabling the user to modify the parameter's setting value.

Remote Co	ontrol Winter	regulation	with fixed	set or clima	itic curve		
Winter reg							
fixed set or climate							
Winter regulation with			09:00 Winter regulatio	09:10 In with fixed set or climatic co	09:20 virve		
Change Set P	oint/Function	Fixed set				~	
		Climatic curve	[	Close			

#### Figure 302: modifying a parameter

The pop-up shows a graphic of the real time trend for the parameter over the last 15 minutes. It is thereby possible to change the parameter's setting value. If default values were set for the parameter, the pop-up displays a combo box with the list of values. If no values have been set for the parameter, the user can set a value as required within the min-max limits defined for the parameter. Once the value has been set, click the tick on the



right (  $\checkmark$ ) and the modification is applied. The graphic allows real time verification that the modification made has effectively been applied.

#### 4.6 Networks and Geolocation

The Networks section lists all the networks owned by the user. Click on the icon 4: the currently enabled networks are displayed, at this stage corresponding only to the network created during device registration. Select a network from the list and the buttons on the right of the interface are enabled.

	AerNet				AE	RNET						
	Jack Frost											
								1	9 Ø	10		۲
-	NETWORKS		Name	Description		Network Type	Public		Time Zon			
*						Show All	Show All					
Lol.	VISUALIZATIONS	1	First Installation			Geographic	NO					

Figure 313: Networks available

Click on the Modify map" icon. A window opens showing the current coordinates proposed for the actual plant, that by default are set to the ROME location.

Networks 🕼 Units' Geografic Map First Installation ×									
No Visualization	No Visualization / No device has been geo-localized								
Choose Map Ce	Choose Map Center Coordinates								
Address	Rome								
Lat. *	41.89193								
Long. *	12.51133								
Confirm									

#### Figure 324: Default coordinates

Now, if the precise plant coordinates are known, you can enter them in the corresponding spaces, otherwise click on "**Confirm**": the plant takes the coordinates present as valid and displays the geographical map with the position taken. It is now possible to drag the bookmark to the actual location of the plant. After identifying the position, click on the disc top-right to save the settings: the location of the plant has now been defined.





#### **5** CONTENTS

1	INTRODUCTION	1
2	WHAT IS NEEDED?	1
3	BEFORE STARTING	1
4	LAUNCH WEB APPLICATION	2
4.1	Initial Check	2
4.2	Launch Web Application AERNET	2
4.3	Creating Plant	4
4.4	Plant view	7
4	.4.1 Measures	7
4	.4.2 Visualizations – AerNet Pro	8
	4.4.2.1 AerNet Pro: "Summary" section	9
	4.4.2.2 AerNet Pro: "Set Points" section	9
	4.4.2.3 AerNet Pro: "Chart" section	10
4.5	Functionality	11
4	9.5.1 Export	11
4	.5.2 Alarms	12
4	.5.3 Modify plant	12
4.6	Networks and Geolocation	16
5	CONTENTS	17





AERMEC S.p.A. 37040 Bevilacqua (VR) Italy–Via Roma, 996 Tel. (+39) 0442 633111 Telefax (+39) 0442 93577 www.aermec.com



Carta reciclata Recycled paper Papier recyclé Recycled papier



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