



eBook

Master your HVAC symphony with Alsmart®

Alsmart® is the latest generation of programmable controller platforms for the HVAC market. Think of it as the cyber-secure, intelligent, compact and powerful brain of your application.

Packed with state-of-the-art technology, Alsmart® empowers you to take your thermodynamic knowledge to the next level — reducing time to market with module-based design and software functionality simulations.



Alsmart® universal programmable controller

– Elevate your HVAC solution with flexibility

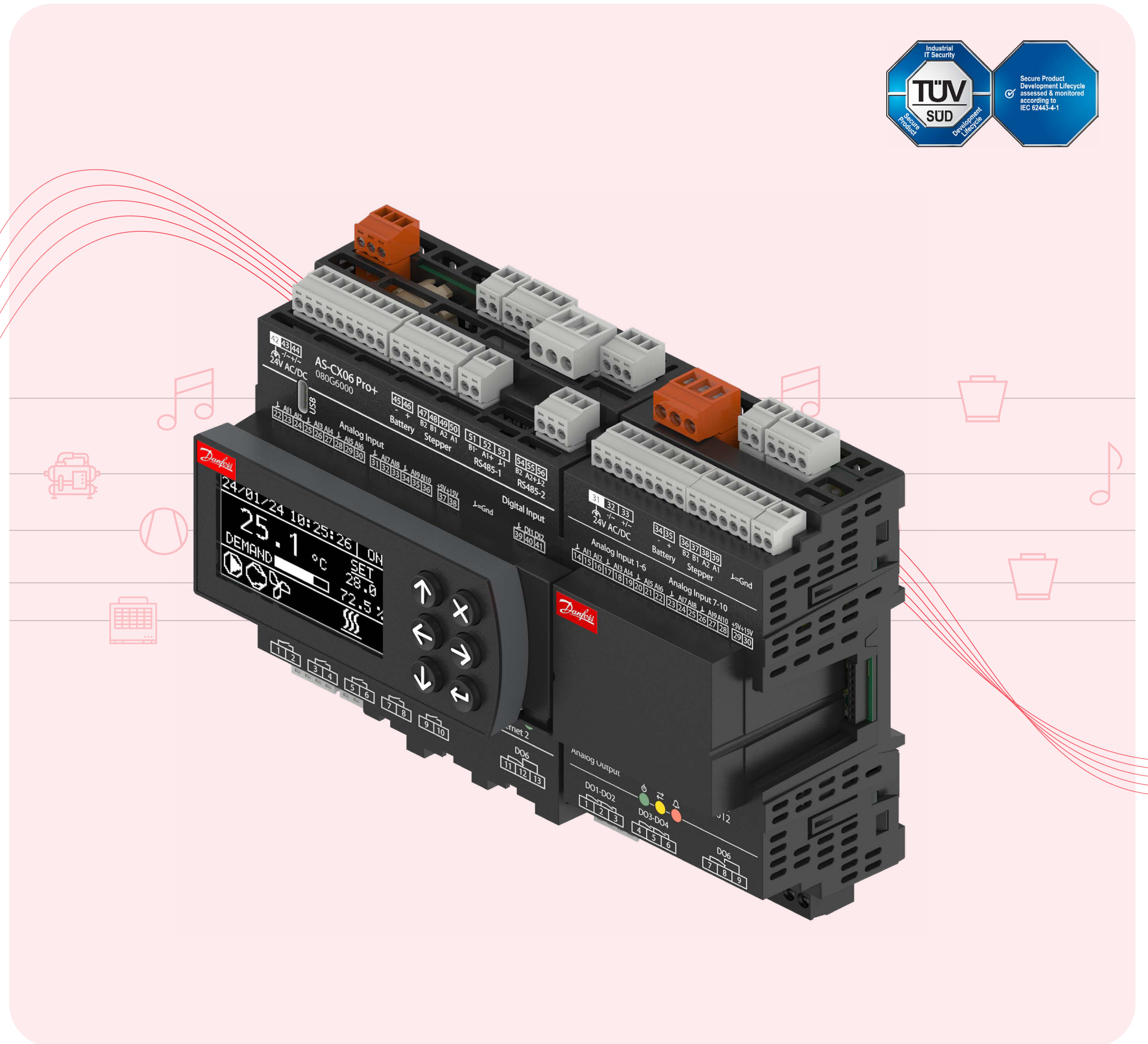
Alsmart® offers a complete and intuitive software platform that helps you take your HVAC application to the next level thanks to the programming tools Alsmart® Design and Alsmart® Service Tool.

Alsmart® Hardware contains a comprehensive range of base controllers, I/O expansion modules, a power supply module, user interfaces and accessories to provide you highly customizable and intelligent control solutions for a wide range of demanding HVAC applications such as chillers, rooftop units, heat pumps and DOAS.

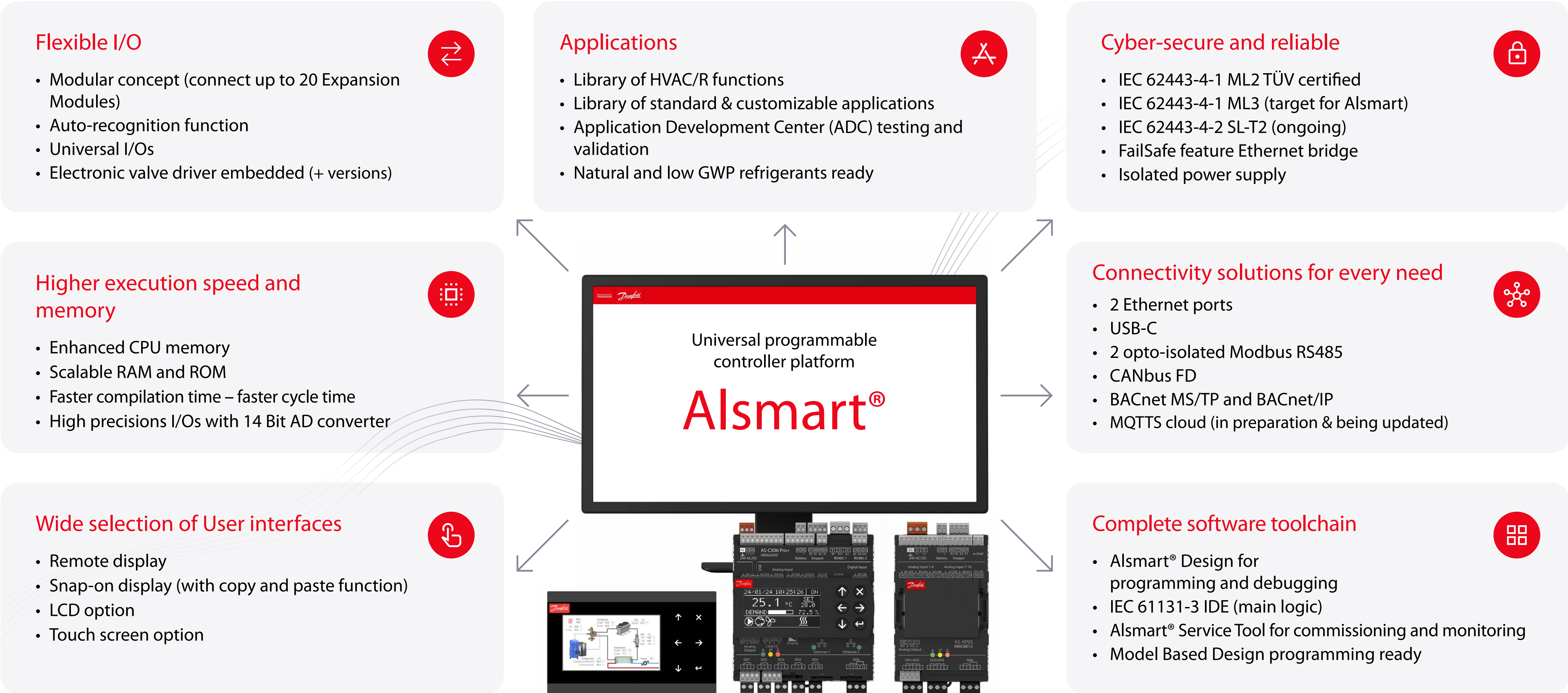
Alsmart® Design is the programming tool that helps you optimize your HVAC application. It is the core of the toolchain and used to program, compile, and debug your application to fully manage the universal controller and expansion modules connected to it.

Alsmart® Service Tool is web-server-based and its main purpose is to set up and monitor the application. The dashboard is customizable, allowing you to add new widgets with live diagrams and graphs, as well as monitor specific preferred parameters.

Alsmart®'s modular design, coupled with its advanced features and robust security, makes it the ideal solution for modern HVAC systems. Discover the power of Alsmart® on the following pages.



The major Alsmart® pillars to achieve the best performance with your HVAC system



Alsmart[®] – Connectivity highlights

Electronic valve driver



Unipolar/Bipolar



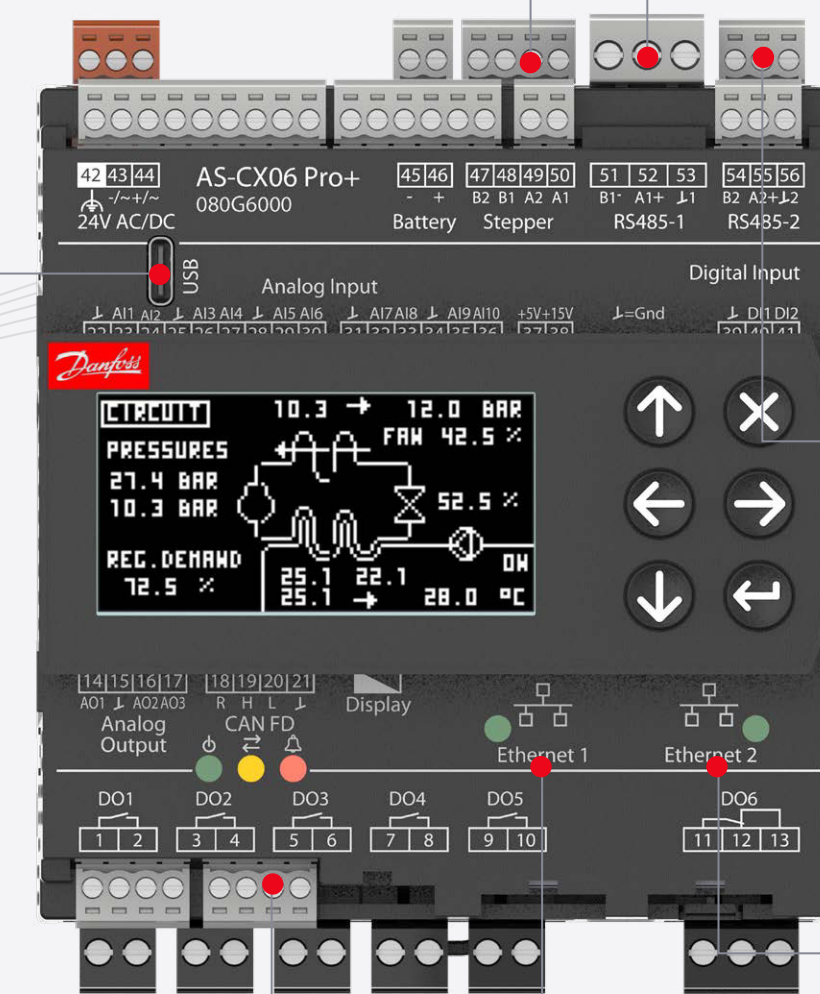
To BMS

Opto-isolated Modbus RS485

USB-C



Pen drive PC connection



VZH & VZN inverter scroll compressors



Turbocor[®]



AB-QM with 3rd. Party device

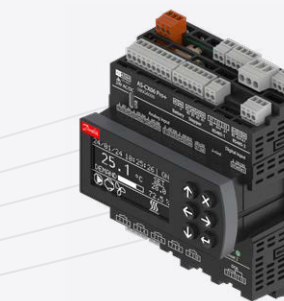


Field bus

RS485 fieldbus (BACnet, Modbus)



2nd AS-CX controller



3rd AS-CX controller

Ethernet port 2

Display port / CAN FD



MMIGRS2



VLT[®] Drive



AS-UI04 Display



Cloud*



BMS



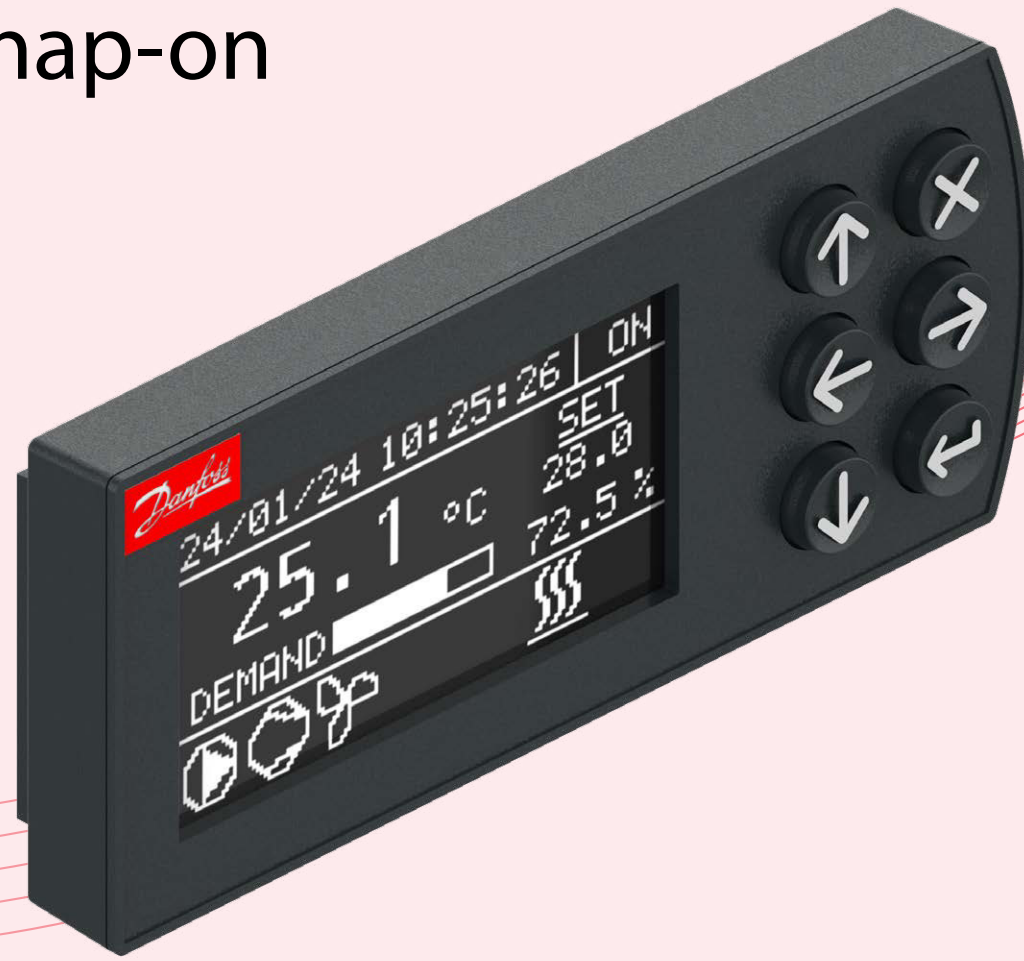
Alsmart Service tool



Ethernet port 1

Alsmart® – User Interfaces

Alsmart® AS-UI Snap-on



Plug & play

Fast and ready to use with magnetic lock on AS-CX controller



Monochrome

LCD FSTN display – resolution 128 x 64 dots
Simple design, black and white colors



Small but incisive screen

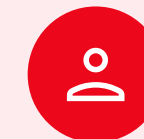
Total Dimension 105 mm x 44.5 mm x 17 mm
Display Dimension 58.4 mm x 32.2 mm



More than a display

Accelerate commissioning by easily copying and pasting parameters and settings across multiple units with Alsmart Snap-on display

Alsmart® AS-UI04 Display



User-friendly

Panel and Wall mounted version with easy connection to Alsmart controller through plug connection (via CAN FD)



High resolution

LCD TFT display – resolution 480 x 272 dots
New set of fonts and symbols to elevate experience



Full color, big screen

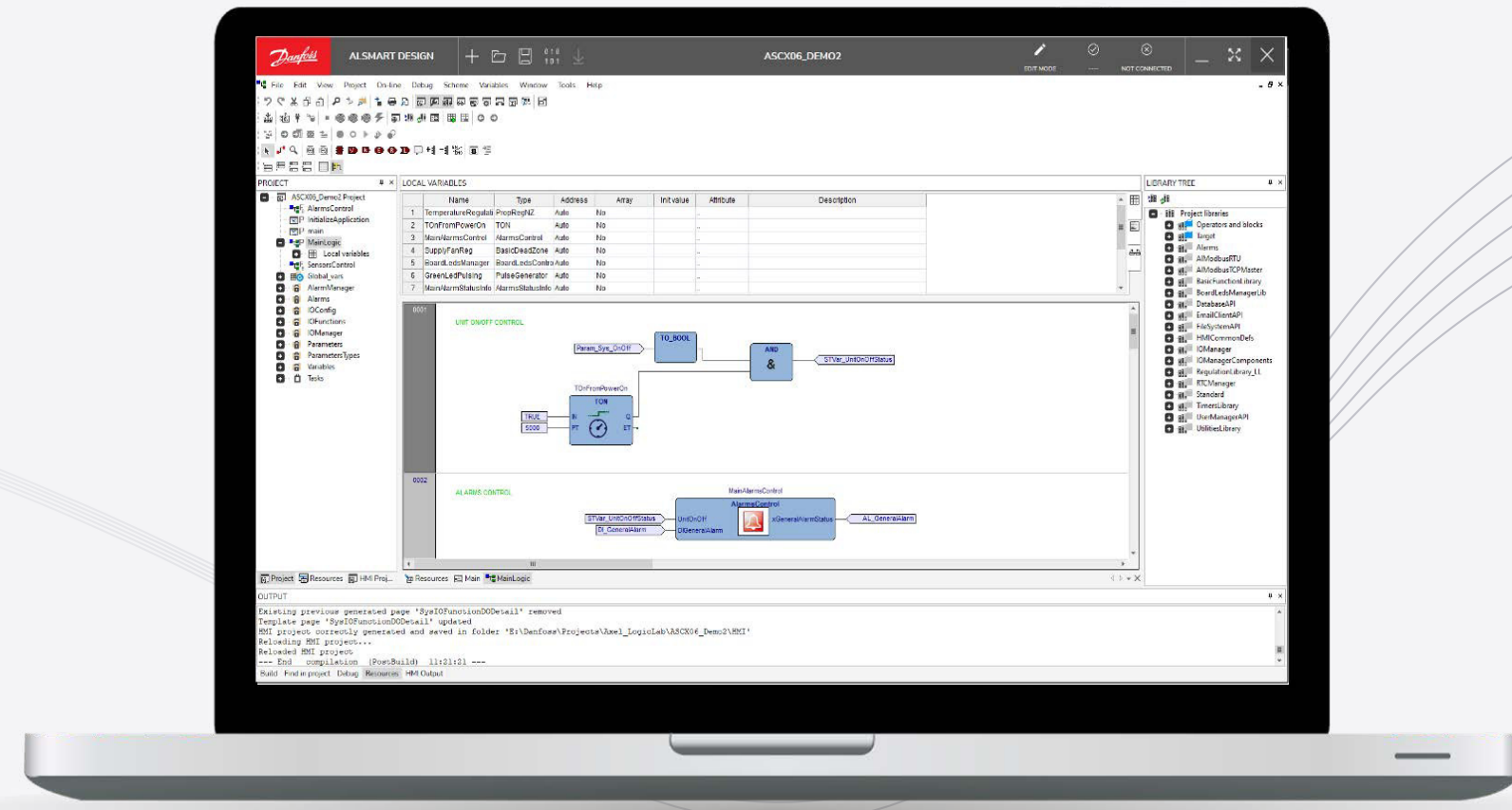
Total Dimension 166 mm x 101 mm x 27 mm
Display Dimension 96.7 x 55.5 mm (4.3")



Customized screens

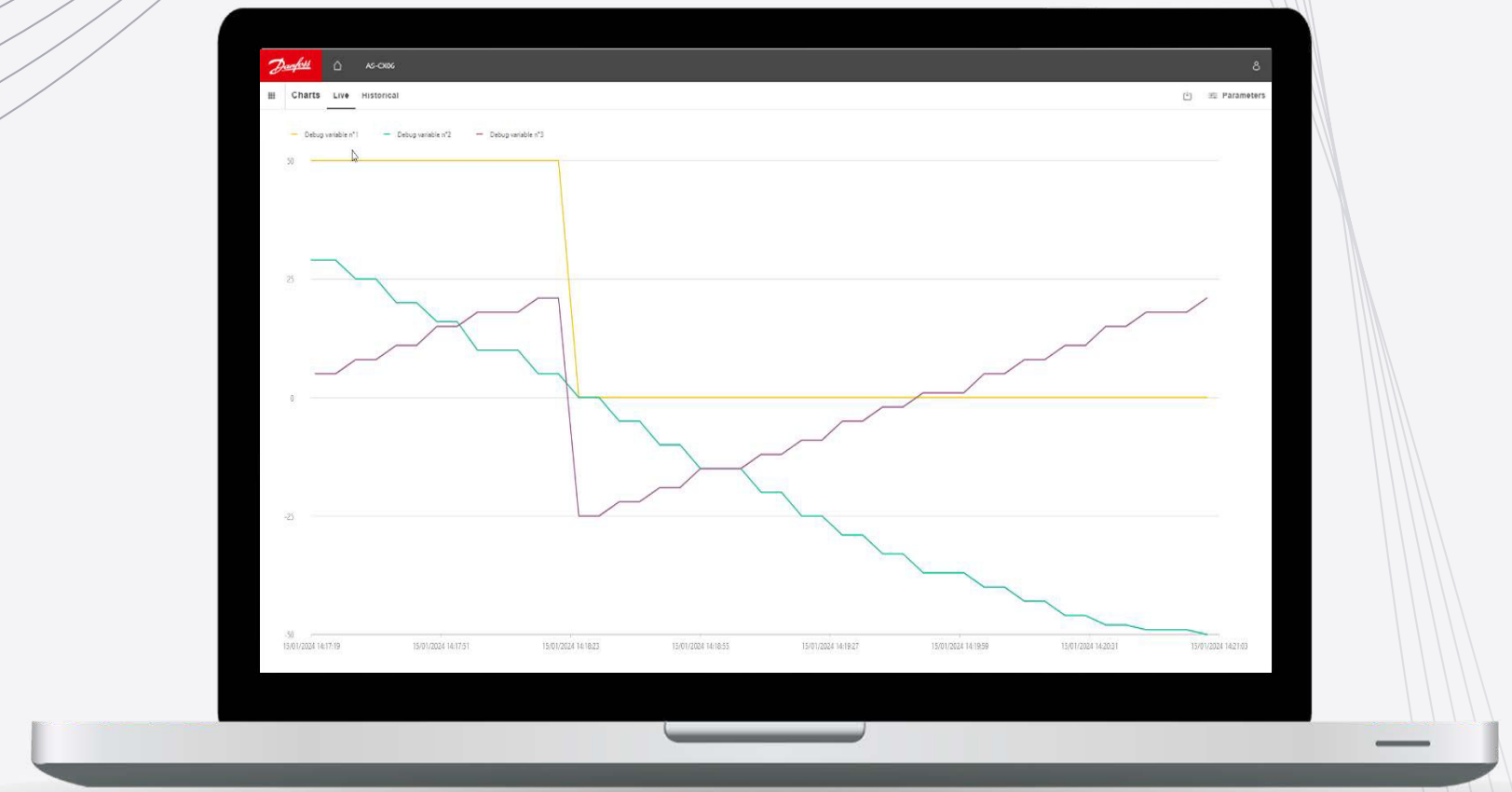
Design your screens from Alsmart Design linked to your application or use the auto-generated screens available to speed up your development

Software Toolchain



Alsmart® Design

is the core of the toolchain, the programming tool used to program, compile, and debug your application to fully manage the universal controller and expansion modules connected to it. It fully complies with the IEC 61131-3 standard and supports five main standard programming languages, with an automated test function embedded, a simulation mode function, options to design and customize your user interface, and many other features that will make the difference in optimizing the performance of your HVAC application.



Alsmart® Service Tool

is web-server-based and its main target is to set up and monitor the application. The dashboard is customizable by adding new widgets with live diagrams and graphs but also to check preferred specific parameters. It's possible to set different users with different access and visibility to create different levels to monitor and manage all application parameters and set up the communication of the controller. From a service part point of view, it's possible to look, save, and download alarms, logs, and behavior history, in order to have a clear understanding of what is happening live in the system and, as a consequence, in order to easily define the best performance of the system and replicate it quickly once again. It also offers the best support for backing up and restoring controller settings for the ultimate maintenance experience.

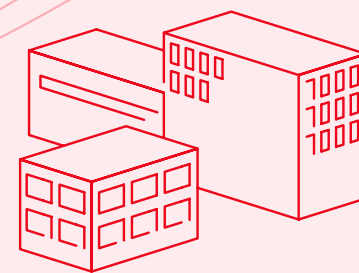
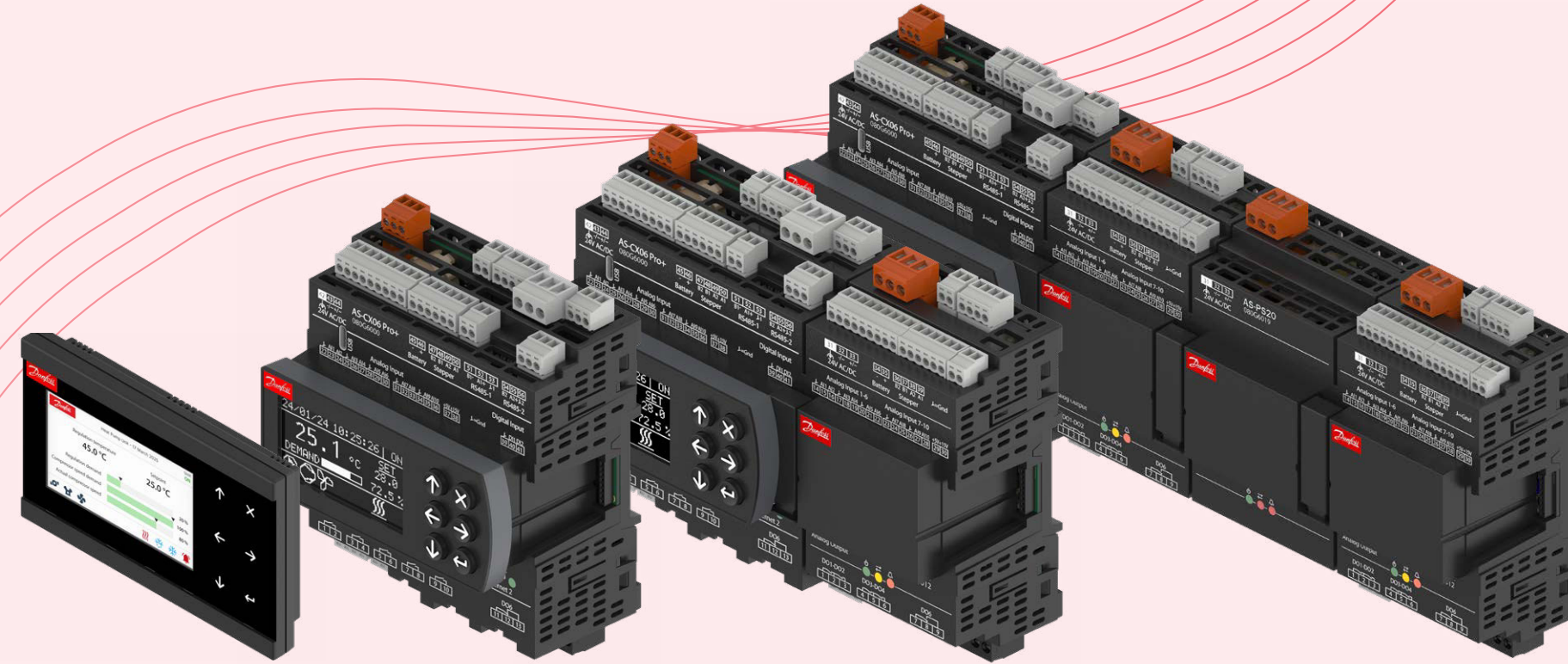
A world of possibilities

With Alsmart®, you can configure your controller to manage virtually any application among many markets. To make things even easier, we are developing a library of pre-programmed blocks and software applications specifically designed for HVAC systems, providing a quick and efficient way to get started.

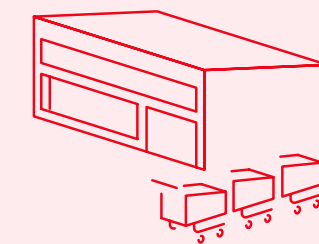
Our ADC laboratory is contributing greatly to the drafting and testing of the software applications to ensure maximum thermodynamic process optimization during the drafting of the application code.

We've leveraged our vast application know-how, broad portfolio and comprehensive support to create the best HVAC control experience with the highest level of performance and safety for you.

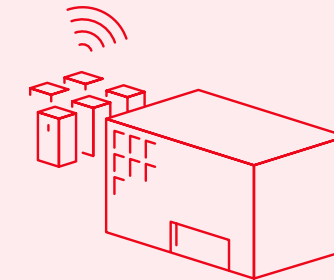
Alsmart®



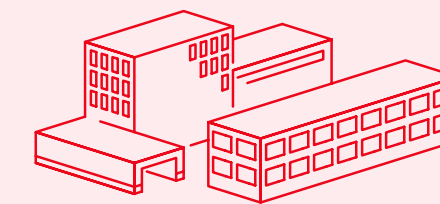
Residential buildings



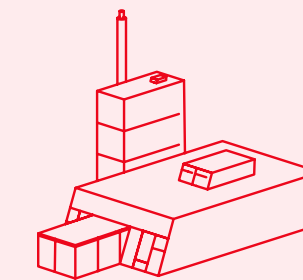
Supermarkets



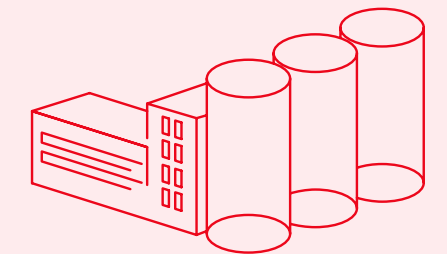
Data centers



Commercial buildings



District heating



BESS

Chillers

Heat pumps

Rooftops

CDU

CRAC

Heating circuits

Domestic hot water

Thermal management

Energy flow regulation

AHU

Alsmart® Design – Highlights

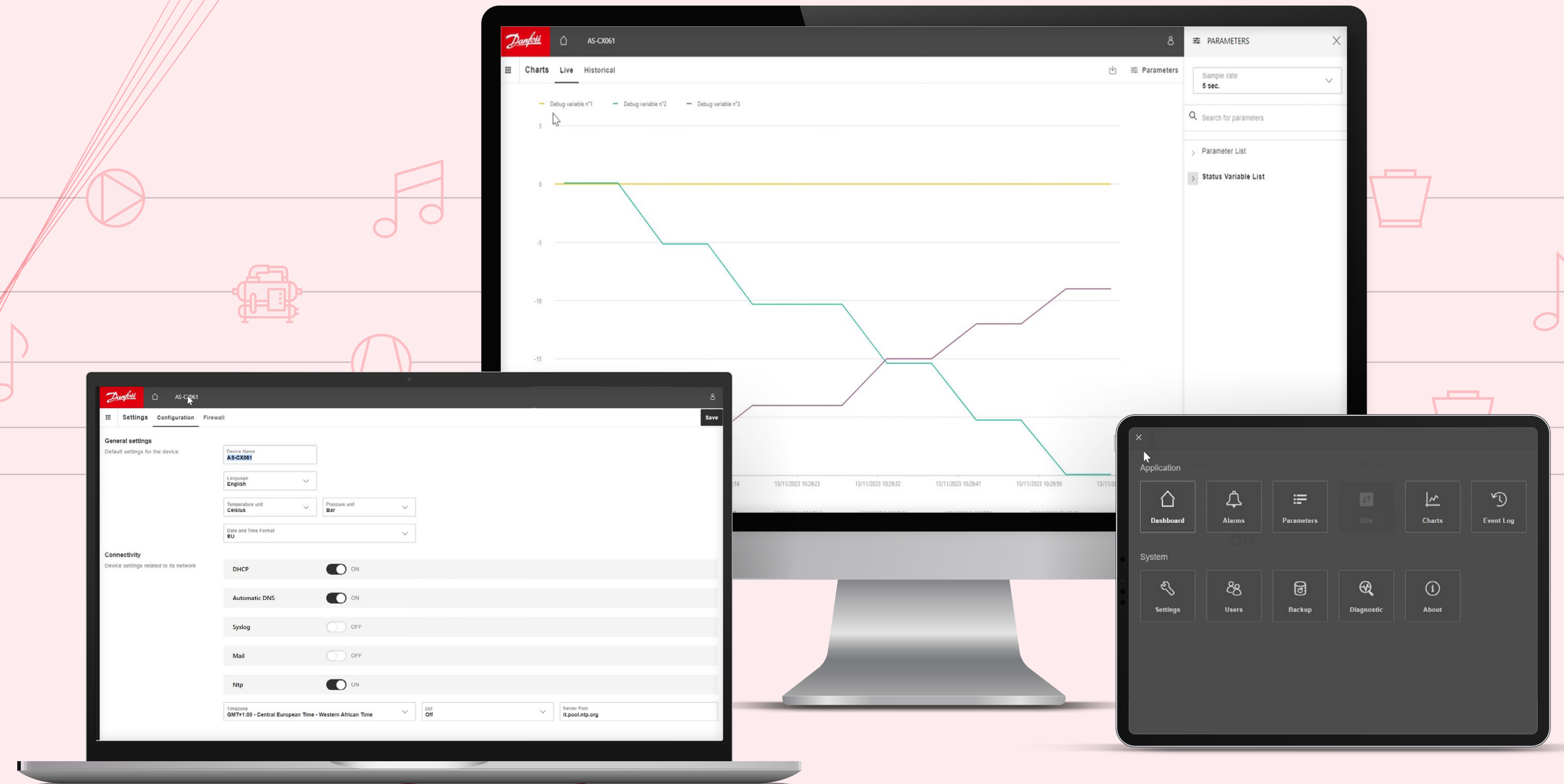
- IEC 61131-3 IDE (main logic)
- UI designer for low resolution displays (monochromatic LCD, 7-segment*)
- UI designer for high resolution displays (UI04)
- Model Based Design programming ready
- Debugger and simulator
- Parameter database
- Translation tool
- Standalone Simulator (no source code needed)
- Standalone ASPKG maker (customize the element of the application)
- Auto generation of menu pages and alarming list
- Database Event Handler
- Automated test system*
- Documentation generator*



* In preparation

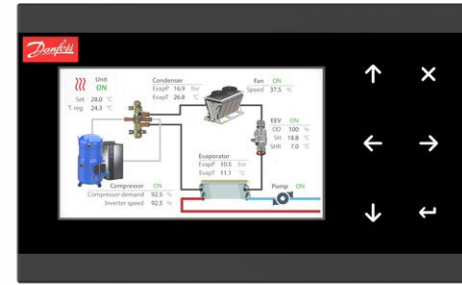
Alsmart® Service Tool – Highlights

- Four levels of access with different visibility
- Dashboard view customizable with widgets
- Alarm log and history accessible and downloadable
- Event log collect in one view all the system notifications and alarms
- Settings and users' sections
- Backup to restore and copy parameters and settings
- I/O Configuration - Simplifies system setup and troubleshooting, reducing installation time and costs

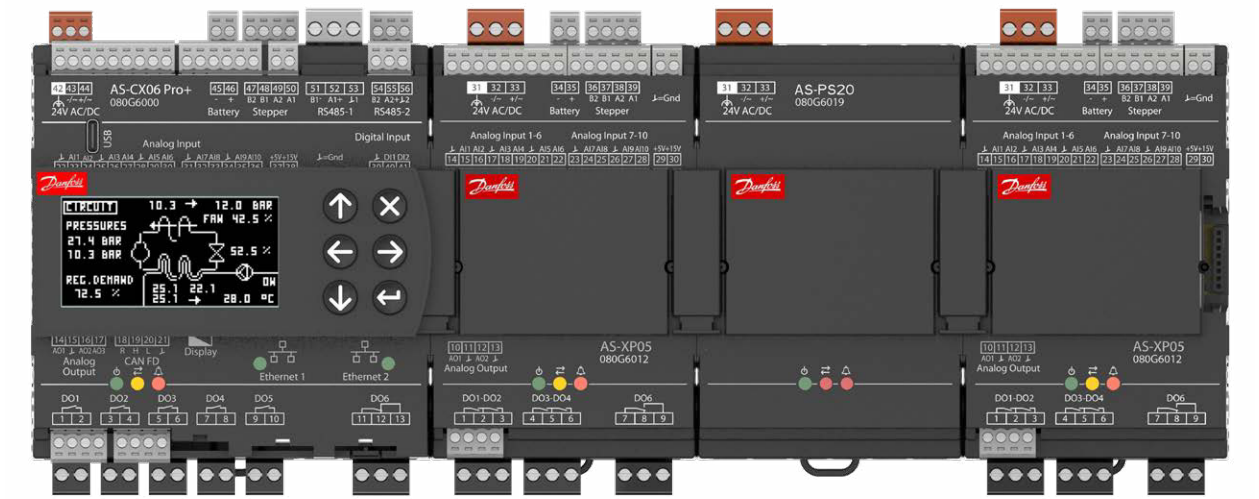


Product range overview – User Interfaces & configurations

[Go to datasheet >](#)



[Go to configuration tool >](#)



User Interfaces

	AS-UI Snap-on	AS-UI04
Type	Graphic LCD FSTN	Graphic LCD TFT
Colors	Black/white	65k colors
Backlight	Dimmerable via software	Dimmerable via software
Resolution	128 x 64	480 x 272
Mounting	Magnetic lock on AS-CX controller	Panel or wall mounting
Dimension (mm)	105 x 44.5 x 17	166 x 101 x 27
Viewing Area (mm)	58.4 x 32.2	96.7 x 55.5 (4.3")
Connectivity	–	CAN FD
Operating T (°C)	-20 / 60	-20 / 60
Degree of Protection	IP40	Panel (front): IP65 Wall: IP20

Configurations

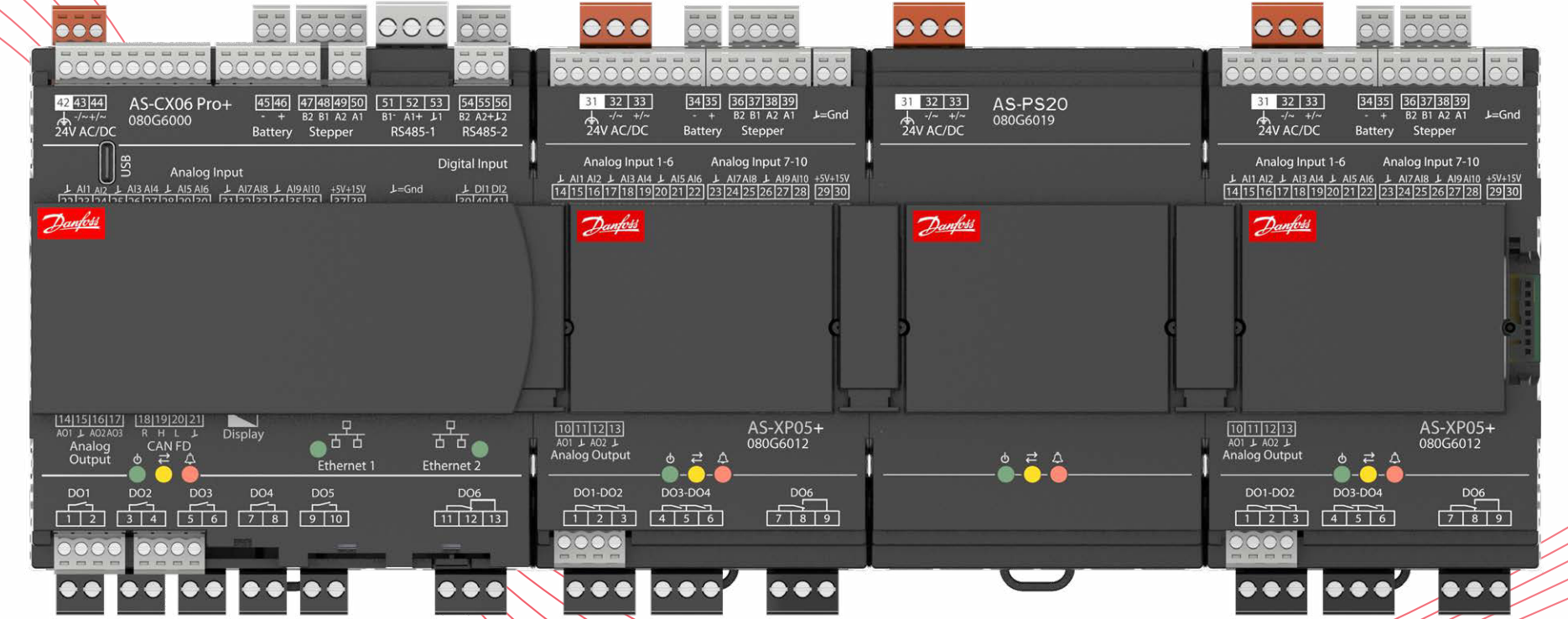
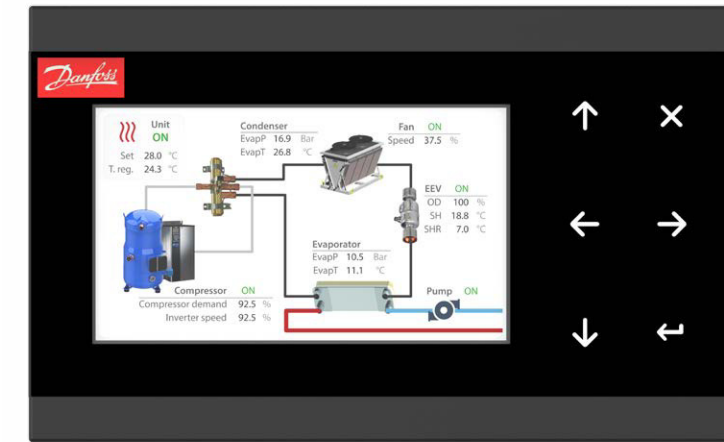
Configuration extensions	Lite		Mid, Mid SSR		Mid+, Mid+ SSR		Pro		Pro+	
Max. Expansion modules (incl. AS-PS20)	1		7		7		20		20	
Max Configuration*	CX06, 1x XP05 or XP05+ or CX06, 1x XP10		CX06, XP05 or XP05+, 1x AS-PS20 plus 4x XP05 or XP05+ or CX06, XP10, 2x AS-PS20 plus 5x XP10				CX06, XP05 or XP05+, 4x AS-PS20 plus 16x XP05 or XP05+ or CX06, XP10, 5x AS-PS20 plus 15x XP10			
Max. Electronic valves	–		–		1		–		1	
Max. configurations with max. number of XP expansion modules	XP05 / XP05+	XP10	XP05 / XP05+	XP10	XP05 / XP05+	XP10	XP05 / XP05+	XP10	XP05 / XP05+	XP10
Max. Digital Outputs	11 6+5	16 6+10	31 6+(5x5)	56 6+(5x10)	31 6+(5x5)	56 6+(5x10)	86 6+(16x5)	156 6+(15x10)	86 6+(16x5)	156 6+(15x10)
Max. Digital Inputs	2 2+0	6 2+4	2 2+(5x0)	22 2+(5x4)	2 2+(5x0)	22 2+(5x4)	2 2+(16x0)	62 2+(15x4)	2 2+(16x0)	62 2+(15x4)
Max. Analog Outputs	5 3+2	5 3+2	13 3+(5x2)	13 3+(5x2)	13 3+(5x2)	13 3+(5x2)	35 3+(16x2)	33 3+(15x2)	35 3+(16x2)	33 3+(15x2)
Max. Universal Inputs	20 10+10	24 10+14	60 10+(5x10)	80 10+(5x14)	60 10+(5x10)	80 10+(5x14)	170 10+(16x10)	220 10+(15x14)	170 10+(16x10)	220 10+(15x14)
Max. Electronic valves	1	–	5	–	6	1	16	–	17	1

* Requires 1x AS-PS20 per 4x XP05 or XP05+ or per 3x XP10

Ready to **get started?**

To learn more about how Alsmart® can optimize your application, reach out to us.

Contact us here >



Visit our Alsmart® website

To learn more about Alsmart® and the supporting software toolchain, please visit our dedicated Alsmart® website.

Visit website >

Alsmart® Community

We welcome you to join our new Alsmart® Community. It's the go-to place for everybody interested in - or user of - the Alsmart® controllers and software tool chain. Find the latest firmware and tool chain software versions, trainings, documentation, FAQ's, software partners, a private area to exchange files with our experts, and much more...

Register here >

Alsmart® Training On-demand

For the Alsmart® portfolio Danfoss provide the option for Online Training or Face to Face. We offer standard courses or customize the training according to your needs. These courses are subject to a fee. Fill out the form and you are on your way to in-depth Alsmart® training.

Training >

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