



New product launch

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CAREL CSE

boss-micro product launch



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1. Technical and market context

boss-micro is the newest size addition to the boss family alongside the current two available: boss and boss-mini. This third size is designed to manage systems with up to 15 devices. Until now, the boss-mini could be used for such applications, although technically its number of function and its cost could often result in being too high for monitoring and managing a few simple units.

On top of the compactness of a 4 DIN module, boss-micro incorporates all the advanced boss family functions with the addition of an innovative integrated 4G modem, not included in the other products in the range.

boss-micro is now fully integrated into the RemotePRO service range, allowing different users to access the entire system for an overall view and global statistics, or directly access an individual site for a more in-depth analysis, based on specific needs.

2. Main innovative features of the new design

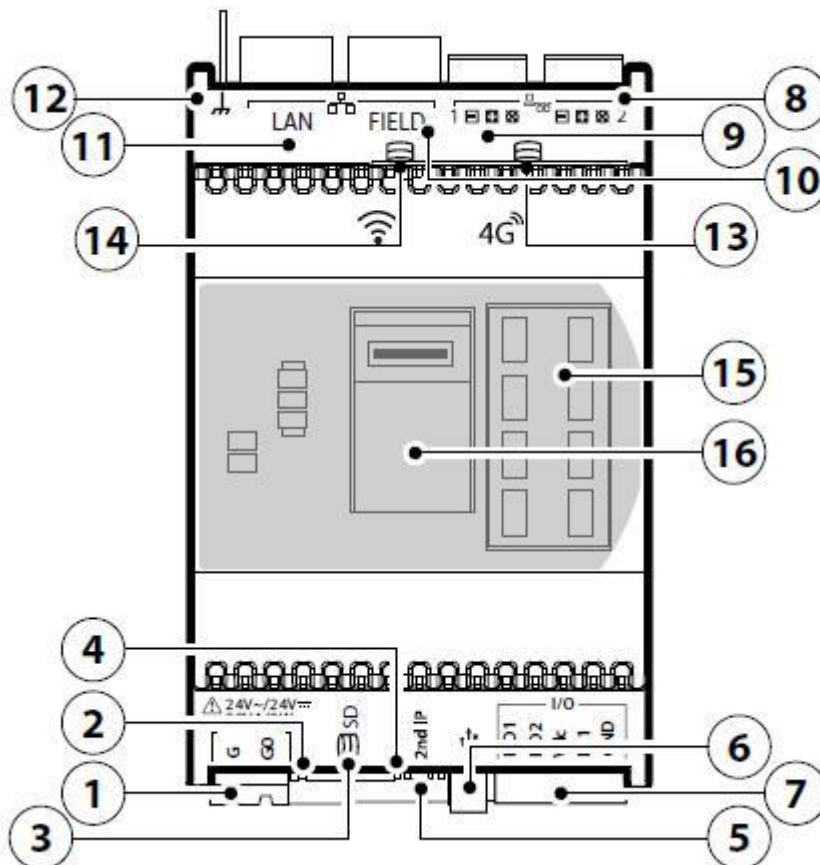
User	Customer need	Response to need
End user Contractor	Intuitive user interface, also accessible from user's mobile device	Customisable and responsive web pages
End user Contractor	Quick and easy access to information	Built-in Wi-Fi hotspot for direct connection, independent of site infrastructure
Installer	Quick installation in compact spaces	Product developed with 4 DIN modules and removable terminals
End user OEM/Contractor	Minimise learning times for new product introduction	Same user interface, functions and I/O types as boss/boss-mini
System integrator	Capacity to integrate third-party devices or boss into a BMS	Standard Client and Server protocols available over RS485 and Ethernet
System integrator	Reduce resources needed to develop solutions	Maps, device models and AlgorithmPRO (customised logic written in JAVA) can be reused across the boss family

3. The design's main business strengths, models and options

boss-micro is available in 4 different HW models: Ethernet, Wi-Fi, 4G, and Wi-Fi with 4G, diversified to meet the different needs of local user interactions and remote connectivity. This makes the boss family completely scalable in terms of features and price, adapting to all market scenarios while simultaneously retaining the same user interface and functions across all systems.

Function	Ethernet model	Wi-Fi model	4G model	Wi-Fi with 4G model
Connection to RemotePRO	Yes	Yes	Yes	Yes
Dual Ethernet LAN/FIELD ports	Yes	Yes	Yes	Yes
WI-FI hotspot	No	Yes	No	Yes
Integrated 4G modem	No	No	Yes	Yes
Managed devices/log variable data	15/150	15/150	15/150	15/150

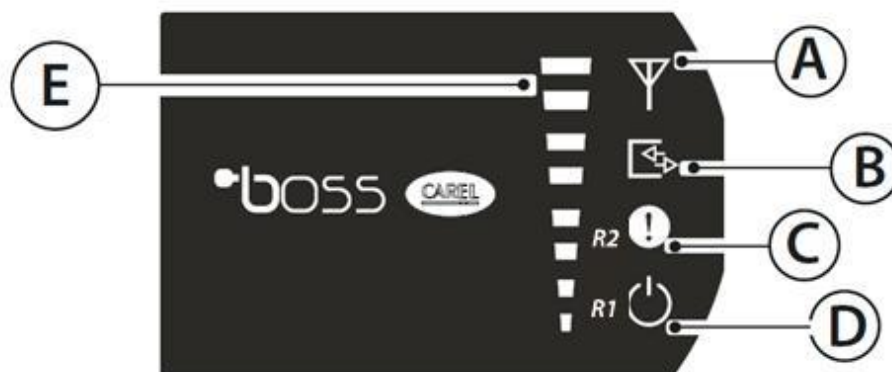
3.1 boss-micro HW feature list



- 1: 24VAC/VDC power supply connector
 - 2: Power-on LED (green)
 - 3: uSD-card reader for backup/recovery
 - 4: Ethernet signalling led
 - 5: Reset button and temporary IP enabler
 - 6: Standard HOST USB port, type A connector (pen drive), for SW updates and saved file download
 - 7: External relay control (BMESTRLA00 module) and dry contact digital input
 - 8: Serial RS485 Opto-isolated
 - 9: Serial RS485 Not Opto-isolated
 - 10: Ethernet FIELD port
 - 11: Ethernet LAN port
 - 12: Faston braided Ethernet earthing cable
 - 13: 2G/3G/4G antenna connector (*)
 - 14: Wi-Fi antenna connector (*)
 - 15: LED Synoptic display
 - 16: SIM connector (*)
- (*) for models where this is provided

3.2 Front LED synoptic display:

To simplify its installation and maintenance phases, boss-micro has a frontal LED interface, which indicates the main statuses, even when not connected to its web interface.



- A: 4G radio module status indicator
- B: Input/output status indicator
- C: Alarm status indicator
- D: System status indicator (on/off)
- E: 2G/3G/4G Radio signal strength and digital output status.

3.3 Models:

Part number	Description
BMBST00RP0	<i>BOSS-MICRO WIRED – (15 DEVICES)</i>
BMBST00FP0	<i>BOSS-MICRO WIRELESS WI-FI – (15 DEVICES)</i>
BMBST00GP0	<i>BOSS-MICRO WIRELESS 4G EMEA – (15 DEVICES) (1)</i>
BMBST00MP0	<i>BOSS-MICRO WIRELESS WI-FI AND 4G EMEA – (15 DEVICES) (1)</i>

NOTES:

- (1) This model is mounted on a 4G radio module compatible with 2/3/4G radio frequencies in EMEA countries, Thailand, and India, with certifications on the finished boss-micro product obtained according to CE/RED (Europe) and EAC/FAC (Russia)

3.4 boss-micro accessories:

The boss-micro power supply is at 24VDC/AC. A 24VAC transformer can be used for AC power supply, or if a DC power supply is preferred, CAREL offers both DIN rail and plug-in options:

Power supply module 115...230VAC -24VDC DIN rail: **PGTA00TRX0**



Power supply module 115...230VAC -24VDC with multi-country plug: **BMESTPWA00**



Where it is necessary to signal the alarms with third party electromechanical systems, boss-micro has to be combined with the boss family relay module:

External relay module (2 used out of 3 available): **BMESTRLA00**



For Wi-Fi or 4G models, if installed inside metal electrical panels, which then act as a screen for radio signals, two special extension kit codes have been created that allow the Wi-Fi or 4G antennas to be remote-mounted outside the panel.

3m extension cable for remote Wi-Fi antenna: **BMBSTEWA00**



3m extension cable for remote 4G antenna: **BMBSTEGA00**



3.5 boss family HW comparison table

Below is a list of the main HW differences within the boss family (those not listed are the same across the range, except for the size of the internal memories):

Function	boss-micro	boss-mini	boss
Wi-Fi hotspot	Depends on the model	Depends on the model	Always available
Removable memory slot	microSD	SD	microSD
Power supply	24VAC/DC	24VAC	12VDC (external power supply included)
RS485 ports	1 Opto/1 Non Opto	1 Opto/1 Non Opto	2 Opto
USB ports	1	1	6
Option of creating additional serial ports with USB converters	No	No	Yes
Integrated 4G router	Depends on the model	No	No
Temporary IP key	Yes	Yes	No
Digital Inputs/Outputs	1 input/2 outputs	3 outputs	1 input/3 outputs
Video output	No	microHDMI	VGA / DP

3.6 boss family SW comparison table

boss-micro will be released on the market with the latest available boss family SW version, 1.6.0. As such, it will carry all the SW functions available in this version of boss/boss-mini and will then evolve alongside the boss family with periodic Service Pack releases.

Below is a list of the main SW differences within the boss family (those not listed are the same throughout the range):

Function	boss-micro	boss-mini	boss
Maximum number of devices connected	15	30/50	100/300
Maximum number of logged variables	150	300/500	1500/3500
Minimum variable sampling time	30 sec	30 sec	5 sec
Maximum number of plug-ins that can be activated (*)	2 (RemotePRO already activated)	4	20
Maximum number of reports that can be recorded in the internal memory	30	60	200
Maximum number of variables that can be shared with server protocols (Modbus/BACnet/SNMP)	250	500	3500

(*) IMPORTANT NOTES:

- 1) all versions of boss-micro already contain 2 inserted credits for plug-in activation, it is not possible to buy and activate further ones.
- 2) compared to boss/boss-mini, boss-micro does not contain the following plug-ins and therefore they cannot be activated:

Heos Dashboards
 KPI management
 Parameter Control
 Safe Restore

Limit imposed on boss-micro's HW resources and the type of HVAC/R systems boss-micro can manage/coordinate.

3.7 4G router, new HW/SW functions introduced in boss-micro

As previously mentioned, boss-micro avails of all the boss family HW/SW functions, suitably resized for its HW resources, plus another exclusive function that is particularly interesting for the type of systems it is designed for: an integrated 4G router. This option makes it possible to send emails/instant messages/SMS messages in response to an alarm situation, or to send reports, without requiring any Internet connection to the IT infrastructure of the building where it is installed, simply by inserting a data SIM card on the customer's side (CAREL does not provide the SIM card). To enable external accessibility (remote browsing of web pages), interaction with the RemotePRO solution is required, or a SIM with fixed public IP. In the absence of 4G signal, the 4G radio module even works on 3G and/or 2G networks if present.

3.8 boss-micro and external devices:

boss-micro cannot manage external mouse, keyboard, printer and monitor devices. The only devices that can be connected are mass storage devices: USB pen drives and microSD cards.

3.9 boss-micro models, configurations and maps compatibility with boss family:

- The models developed for boss using Device Creator are compatible with boss-micro, without any modifications required, except for verification of the minimum variable sampling time, which if set to 5 sec (boss application) is changed to 30 sec.
- The maps created for boss and boss-mini can be reused in boss-micro after adapting the addresses of the new variable indices shown in the map.

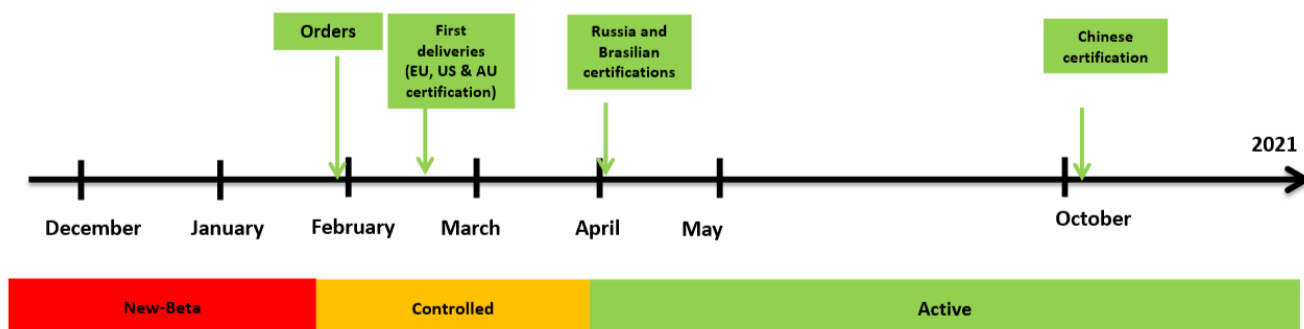
3.10 Languages available:

The first version of boss-micro will be released in the current boss/boss-mini languages: Italian, English, German, French, Spanish, Portuguese, Russian, Turkish, Chinese, Polish, Danish, Swedish, Japanese, Hungarian, Dutch and Korean. To add new languages to future versions, contact the relevant MU to discuss the opportunities and scheduling of this activity. Translation of the strings from English to the new language will be managed operationally by the subsidiaries. Any new languages cannot be added to subsequent Service Packs, and it is not possible to change the language on boss/boss-mini/boss-micro when already in operation, as for construction, the language chosen during commissioning cannot be changed.

3.11 Summary comparison table between boss/boss-mini/boss-micro:

Features	boss	boss-mini	boss-micro
HARDWARE			
Integrated Wi-Fi connectivity to mobile devices	YES	YES (according to the model)	NO
Video output	YES : VGA / Display Port	YES: micro HDMI (according to the model)	NO
Double Ethernet port (separation of LAN / Internet connections)	YES	YES	YES
Integrated backup memory expansion	YES (uSD memory)	YES (SD memory already inserted)	YES (uSD memory)
Embedded RS485 ports	2 Optoinsulated	1 Optoinsulated 1 Not Optoinsulated	1 Optoinsulated 1 Not Optoinsulated
Integrated digital input	YES	NO	YES
Temporary IP address reset button	NO	YES	YES
Integrated digital outputs	3 relays with changeover contacts	3 outputs +24Vdc	2 outputs +24Vdc
USB host ports	6 (2 front e 4 rear)	1	1
Status LED	8 front (on/off , alarm, 2 RS485 ports, 3 relays, digital inputs)	2 front (on/off , alarm)	8 front (status, I/O, radio signal)
4G integrated model	NO	NO	YES
Possibility to connect an external UMTS modem to send SMS messages	YES	YES	NO (not necessary)
Power supply	100-240 V~ 50-60 Hz (power module input)	24Vdc	24Vac/dc
SOFTWARE			
All pages responsive Yes	YES	YES	YES
Graphic customisation with HTML5 / SVG technology (using c.web tool)	YES	YES	YES
Web connection with encrypted protocol (HTTPS)	YES	YES	YES
Third-party device integration (using device creator tool)	YES	YES	YES
Minimum variable sampling time	5 sec	30 sec	30 sec
Maximum number of devices and logged variables	300/3500	50/500	15/150
Modbus RTU Client protocol	YES	YES	YES
Modbus TCP/IP Client protocol	YES	YES	YES
Data synchronisation with RemotePRO (cost 1 plug-in credit)	YES	YES	YES
BACnet Client Protocol (MSTP and TCP/IP) (cost 1 plug-in credit)	YES	YES	YES
BACnet Server Protocol (TCP/IP) (cost 1 plug-in credit)	YES	YES	YES
Modbus RTU or TCP/IP Server protocol (cost 1 plug-in credit)	YES	YES	YES
XML Manager protocol (cost 1 plug-in credit)	YES	YES	YES
Protocollo SNMP Manager	YES	YES	YES
Protocollo MQTT	YES	YES	YES
Protocollo SNMP Agent	YES	YES	YES
Custom logic development by customer (cost 1 plug-in credit)	YES	YES	YES
Logical devices / logical variables (cost 1 plug-in credit)	YES	YES	YES
Performance index (cost 1 plug-in credit)	YES	YES	NO
Energy consumption control and management (cost 1 plug-in credit)	YES	YES	YES
Suction pressure optimisation (cost 1 plug-in credit)	YES	YES	YES
Parameter control (cost 1 plug-in credit)	YES	YES	NO
Compressor rack safe restart (cost 1 plug-in credit)	YES	YES	NO
Dew point broadcast (cost 1 plug-in credit)	YES	YES	YES
HVAC unit free cooling optimisation (cost 1 plug-in credit)	YES	YES	YES
Air-conditioning on/off optimisation (cost 1 plug-in credit)	YES	YES	YES
Optimised lighting management based on outside light YES (cost 1 plug-in credit)	YES	YES	YES
Optimised unit capacity management (cost 1 plug-in credit)	YES	YES	YES
Maximum number of extra functions that can be enabled (plug-ins)	20	3	2
Send email	YES	YES	YES
Send instant messages (Telegram)	YES	YES	YES
Send SMS	YES	YES	YES
Manual and/or automatic reports in CSV and PDF format	YES	YES	YES
Scheduled activity management	YES	YES	YES

4. Product availability



The first orders for boss-micro can be placed from the end of February 2021, with deliveries scheduled within 2/3 weeks.

The units delivered up to the end of March 2021 will be labelled certified for counties of Europe, North America and Australia. In April 2021, boss-micro will also obtain certifications for Russia and Brazil. For China, certification is expected in September 2021.

During the initial period, all subsidiaries are asked to cooperate in the field installation of the first boss-micro units. During this period only orders for quantities of 2 to 5 boss-micro units per customer will be approved. These limited quantities will allow us to guarantee full support from HQ for individual installations, and allow the subsidiary/customer the necessary time to become familiar with the product and all of its functions. In these first installations, remote connectivity to the sites is required to guarantee prompt support in the event of requests for assistance from HQ, as well as close communication and sharing of feedback. It will then become possible to deliver larger boss-micro orders to subsidiaries who have followed the above procedure.

The DEMO available on KSA for boss can be used as a tool for studying the features of boss-micro because, as already described, both share the same functions. However, it is not possible to use the DEMO to create configurations and export them for subsequent installation on boss-micro. Throughout year, the possibility of releasing a DEMO version that also allows "offline" site configuration and consequently the backup files import/export functions will be reviewed.

5. Availability of sales support tools

Documentation

Part number	Description	Date
+0500152xx	Technical leaflet languages IT-EN-CN-PT	Available
+3000110xx	boss range brochure IT / EN / DE / FR / ES	Integrated with boss-micro by April 2021
ksa.carel.com	PPT presentation in English	Available by March 2021
ksa.carel.com	Online help for boss range in HTML format, IT / EN / DE / FR / ES for look-up from a PC	Available
ksa.carel.com	Online help for boss range in PDF format, IT / EN / DE / FR / ES, printable	Available
carel.com	Online product presentation	Available by April 2021

6. Training courses

The installation, start-up and use of boss-micro all follow those of boss and boss-mini, except for the internal 4G modem configuration (a topic which FAQs will be posted for on KSA). These products are already well known within our sales and service network, so there is no special training to introduce the boss-micro product. However, video tutorials are available on the CAREL YouTube channel and on the boss section of KSA, which show how to install and configure the various boss family functions.

Kind Regards
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