

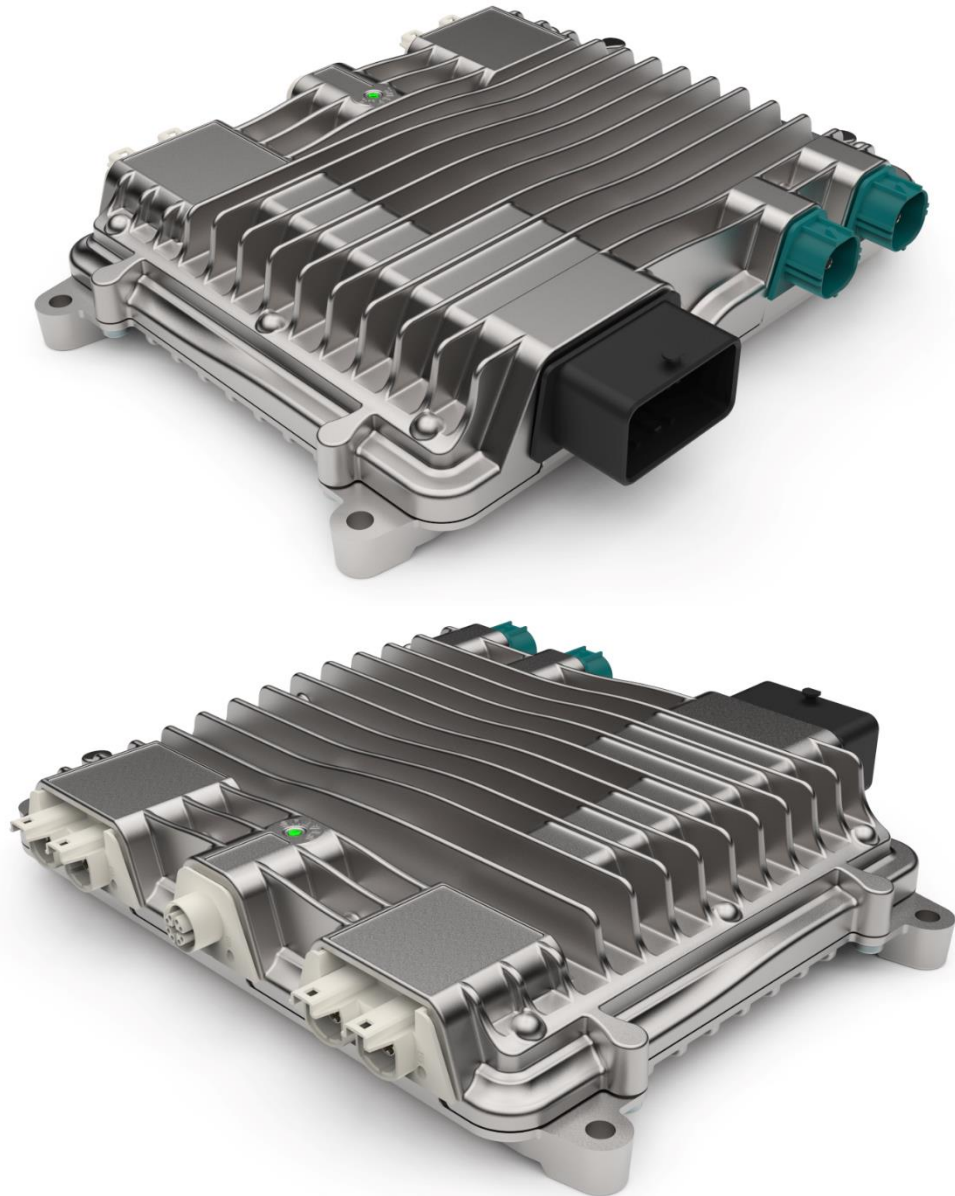
Product data sheet (preliminary)

## Edge Gateway

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**LEG<sup>4</sup>IT**

15 February 2024, Liebherr-Electronics and Drives GmbH



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## Product history

SPF	Release	Change description	Boot loader	Firmware	Operating instructions
001	2023-01	Engineering samples	Vxxx	V0.1	-

## Document history

Issue	Date	Revisions
00_01	2023-04-30	- Preliminary edition for engineering samples
00_01	2024-02-15	- Editorial changes - Updating the technical content and supplementing the NA variant

### Note

Liebherr-Electronics and Drives GmbH reserves the right to change illustrations and descriptions in this documentation without prior information.

## Manufacturer

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# Description

The LEG<sup>4</sup>IT edge gateway is the digital link between a local area network (LAN) and a cloud. The product connects the participants of a local network securely and reliably with the Internet of Things (IoT). The LEG<sup>4</sup>IT edge gateway has cellular interfaces and is therefore particularly suitable for realising stable and fast communication. With this gateway, machines can be connected to the internet from almost any location and thus make cloud services available.

The LEG<sup>4</sup>IT edge gateway is available in two variants. The NA variant supports the frequency bands that are mainly used in North America. The EU version also supports many internationally used frequency bands and can therefore be used internationally as far as possible.

The LEG<sup>4</sup>IT provides the following functions:

- Communication interfaces
  - Cellular 5G
  - WiFi 5
  - Bluetooth® 5.2
  - 3x CAN (FD)
  - RS232
  - USB 2.0
  - 2x FPD-Link 3
  - 1x Ethernet 1000BASE-T1
  - 1x Ethernet 1000BASE-T
- Computing power
  - NXP i.MX8®: Quad Core
  - Programme memory: 64 GB eMMC 5.1  
64 MB NOR
  - RAM: 4 GB LPDDR4
- Multiple operating system
  - Linux
  - Windows IoT
- Measuring inputs and control outputs
  - 2x digital high-side output:  $U_{T30} / 1.25 \text{ A}$
  - 2x digital input: 0 V to  $U_{T30}$
  - 5x analogue voltage input: 30 V / 10 Bit
- System wake options
  - KS0 to KS2 power down mode
  - Wake-up on Terminal 15
  - Wake-up on RTC alert
  - Wake-up on cellular incoming call
- Operating conditions
  - Operating voltage range: 10 to 32 V
  - Operating temperature range: -40 to +85 °C<sup>1</sup>
  - Degree of protection: IP6K5

## Programming and adjustment

The product is application-specific and freely programmable. This programming is implemented by the OEM. A detailed description of the product functions is therefore not possible. Information about the development environment, the basic software and the software development for the product is provided to customers by the technical support.

<sup>1</sup> The upper temperature limit has not yet been verified. Changes and restrictions to +65 °C possible.

# Technical data

Computing system		12785183 LEG4IT-EU	12785184 LEG4IT-EU
Processor	i.MX 8QuadXPlus, ARM Cortex®-4x A35/1x M4F	Quad	Quad
Programme memory	eMMC/NOR	64 GB/64 MB	64 GB/64 MB
RAM	LPDDR4	4 GB	4 GB
Interfaces			
Cellular Interface		4 antennas	4 antennas
5G	5G Sub6GHz DL Cat19 / UL Cat18 3GPP Rel.16 NSA/SA NSA: Max. 3.4 Gbps (DL)/550 Mbps (UL) SA: Max. 2.4 Gbps (DL)/900 Mbps (UL) Supported frequency bands <sup>2</sup>	● ● ● ● n1, n3, n5, n7, n8, n20, n28, n38, n40, n41, n75, n76, n77, n78	● ● ● ● n2, n5, n7, n12, n13, n14, n25, n26, n28, n29, n30, n38, n41, n48, n66, n70, n71, n77, n78
4G/LTE	Supported frequency bands <sup>2</sup>	B1, B3, B5, B7, B8, B20, B28, B32, B38, B40, B41, B42, B43	B2, B4, B5, B7, B12, B13, B14, B17, B25, B26, B29, B30, B38, B41, B42, B43, B48, B66, B71
3G/UMTS	Supported frequency bands <sup>2</sup>	B1, B5, B8	–
WiFi 5	In accordance with IEEE 802.11a/b/g/n/ac, 2x2 MIMO	2 antennas	2 antennas
Bluetooth®	5.2 BR/EDR/LE	1 antenna shared with WiFi	1 antenna shared with WiFi
LAN	10/100/1000BASE-T(X) according to IEEE 802.3	1	1
Automotive LAN	100/1000BASE-T1 according to IEEE 802.3 bp/bw Supported interface power U <sub>T30</sub> / 1 A	1	1
GNSS	GPS, Galileo, GLONASS, Beidou, QZSS	1 active antenna	1 active antenna
CAN (FD) <sup>3</sup>	In accordance with ISO 11898-2:2016, SAE J2284-1 to SAE J2284-5 up to 5 Mbit/s	3	3
FPD-Link III	Single or Dual FPD-Link output STP up to WUXGA and 1080p60 24bit	2	2
USB 2.0	OTG (On-The-Go) Supported interface power 5 V / 0,5 A	1	1
RS 232	RXT/TXT and RTS/CTS	1	1

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<sup>2</sup> The frequency bands that can be used depend on the respective country approval.

<sup>3</sup> The interface meets the hardware requirements according to ISOBUS (ISO 11783-2:2019).

## Inputs and Outputs

Digital inputs	$U_{IN}$ : 0 V to $U_{T30}$ (High: $\geq 3.5$ V, Low: $\leq 1.5$ V)	2	2
Digital outputs	$U_{OUT}$ : 0 V/ $U_{T30}$ , $I_{OUT max}$ : 1.25 A	2	2
Analogue input	$U_{IN}$ : 0 to 32 V / 10 Bit	5	5

## Additional functions

Real-time clock	buffered for 20 days at 25 °C	1	1
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## Operating conditions

Operating voltage range	$U_{T30}$	8 to 32 V	8 to 32 V
Switch-on threshold	$U_{TH,L}$	$\geq 8$ V $\pm 5$ %	$\geq 8$ V $\pm 5$ %
Operating temperature <sup>4</sup>	Ambient temperature at the installation site	-30 to +85 °C	-30 to +85 °C
Storage temperature	Ambient temperature at storage location	-40 to +85 °C	-40 to +85 °C

## Miscellaneous

Dimensions	W x H x D [mm]	234 x 47 x 203	234 x 47 x 203
Housing	Die-cast aluminum material	●	●
Weight		1.3 kg	1.3 kg
Degree of protection	In accordance with ISO 20653	IP6K5	IP6K5

Character meaning: ● Standard, ○ Optional, — not possible

<sup>4</sup> The upper temperature limit has not yet been verified. Changes and restrictions to +65 °C possible.