

iDC-SOC

intelligent Data Concentrator

The data concentrator iDC-SOC forms the intelligent interface between the luminaire controllers in the field and the central control technology (f.e. SCADA).

As a major connecting element of the lighting management system, the iDC-SOC enables direct access to each luminaire controller via narrowband and broadband powerline technology standardised in accordance with CENELEC 50061-1, ANSI/CTA (709.1, 709.2, 709.8) and EN (14908-1, 14908-3, 14908-8).

In combination with the RF MESH interface iARM, data can be transmitted in accordance with ANSI/CTA 709.11 and EN 14908-11 (in preparation). This makes it easy to convert and expand existing powerline street lighting systems to radio transmission.

The iDC-SOC decentralises important control technology functions in order to additionally ensure the autonomous and self-sufficient operation of the lighting system.

Typical Applications

- Street and building-related lighting with direct integration via an OPC UA or TALQ-2 client-server architecture
- Tunnel lighting
- Sports lighting
- Building automation

V-1.1 | 06.2026

*Interoperable Communication Technology
for Smart Cities and Buildings*



Product Benefits

- Transmission options: 4G (optional 5G) router, IP/Ethernet cable or fibre optics
- Connection of the field level via widespread mobile networks of different providers
- In parallel or alternatively, the iDC-SOC can also be integrated into an IP network via a Ethernet cable
- Integrated TALQ-2 interface via certified iCiti-TALQ-App
- With the separate commissioning software projects can be set up conveniently and in a time-saving manner
- 2 years warranty

iCiti intelligent.
efficient.
controls.

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Technical Details

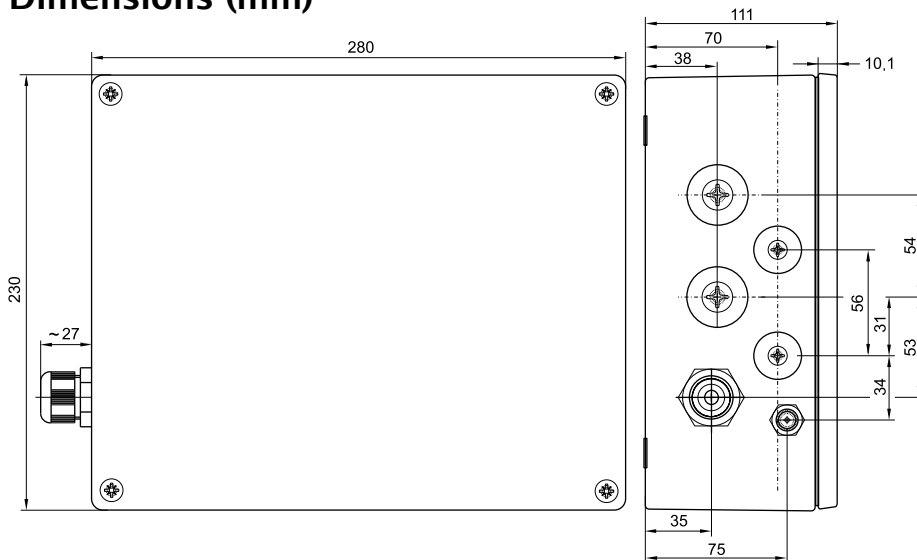
Electronic Edge Controller	iDC-SOC – intelligent Data Concentrator			
Type Standard	iDC-SOC-IP	iDC-SOC-R4G	iDC-SOC-MM	iDC-SOC-SM
Ref. No.	200102	200079	200080	200081
Type Narrowband	iDC-SOC-IP-NB	iDC-SOC-R4G-NB	iDC-SOC-MM-NB	iDC-SOC-SM-NB
Ref. No.	200082	200083	200084	200085
Type Narrowband/Digital	iDC-SOC-IP-NB-IO	iDC-SOC-R4G-NB-IO	iDC-SOC-MM-NB-IO	iDC-SOC-SM-NB-IO
Ref. No.	200086	200087	200088	200089
Mains voltage / frequency	110–230 V AC (± 10%) / 50/60 Hz			
Max. power consumption	25 W (incl. 4 x 500 mA per USB port)			
Communication	To the main computer Protocol TCP/IP, UDP, http, https, SMTP, POP3, MQTT/REST, openVPN, OPC-UA, TALQ-2			
Protocol (USA/Europe)	USA: ANSI/CTA 709.1, 709.2, 709.8, 852 - Europe: EN 14908-1, 14908-3, 14908-4, 14908-8			
Narrowband powerline (only NB)	Acc. to CENELEC 50065-1 (primary band C 125–140 kHz; secondary band B 95–125 kHz); single-, bi- or triphase			
Broadband powerline	External coupler HD-PLC via IP, e.g. iPC-HD and software driver required			
RF Mesh operation	With iARM-I module (active radio module for RF mesh operation of the iDC-SOC - Ref. No.: 200072)			
Data transfer	Manager/Subordinate for max. 1000 luminaire controllers; repeating with dynamic monitoring of the communication path (in Narrowband Powerline operation, max. 200 luminaire controllers per iDC-SOC are recommended)			
Interfaces	4 x USB 2.0 A (all loadable with 500 mA), 1 x Micro-USB, 1 x HDMI V1.3a, 2 x RJ45 (Ethernet) 10/100 Mbit/s, 1 x RS485, isolated, individually terminable, RS232/RS485, isolated, RS485 individually terminable, 1 x system bus for connecting LON interfaces and I/O modules directly via the mounting rail			
Software interfaces	Interoperable in acc. with the LonMark® OLC profile, use of network variables and configuration parameters; on request: KNX, BACnet, M-BUS			
Smart Manager features	Processor: 1.2 GHz, quad-core 64-bit, 1 GByte RAM, flash memory: 32 GByte, RTC: lithium battery CR2032, optical display/button: 1 status LED, freely programmable, 1 button, freely programmable			
Digital I/O (only NB-IO)	2 x 30 V DC (optionally extendable using a cut-off relay for 230 V AC) / 2 relays 230 V AC, 4 A			
Optical fibre	---	---	1x100 base 1FX, MM cable, SC sockets (ST on request)	1x100 base FX, SM cable, SC sockets (ST on request)
Fibre	---	---	Multimode fibre (MM) 50/125Ijm 0...5000 m; 8 dB link budget at 1300 nm; A=1 dB/km, 3 dB reserve, B=800 MHz x km Multimode fibre (MM) 62.5/125Ijm 0...4000 m; 11 dB link budget at 1300 nm; A=1 dB/km, 3 dB reserve, B=500 MHz x km	Single-mode fibre (SM) 9/125Ijm 0...3250 m; 16 dB/km link budget at 1300 nm; A=0.4 dB/km, 3 dB reserve, D=3.5 ps/(nm x km)
Wireless communication	---	4G modem, VPN 4G router	---	---
SIM card	---	Holder; delivery without SIM card; SIM card must be provided by customer	---	---
Connections	Boreholes for metric screw connections each: M25 x 1.5 mm / M32 x 1.5 mm / M20 x 1.5 mm			
Aerial connection	FME male for external aerial			
Operating temperature range tc	-25 to +55 °C			
Storage temperature range	-25 to +65 °C			
Surge voltage protection	Externally extended 10 kV / 1.2 / 50; acc. to EN 61547			
Degree of protection	IP65			
Protection class	I			
Casing material	Aluminium, AlSi12 (Fe)			
Dimensions (WxHxD)	280 x 230 x 111 mm			
Weight	4600 g	5200 g	4800 g	4800 g
Country of origin	Made in Germany			
Custom tariff number	8543 7090			



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Any such changes will be made without separate notification. Please find further
detailed information at www.iciti.de

V-1.1 | 06.2026

Dimensions (mm)



The iDC-SOC's Local Application Intelligence

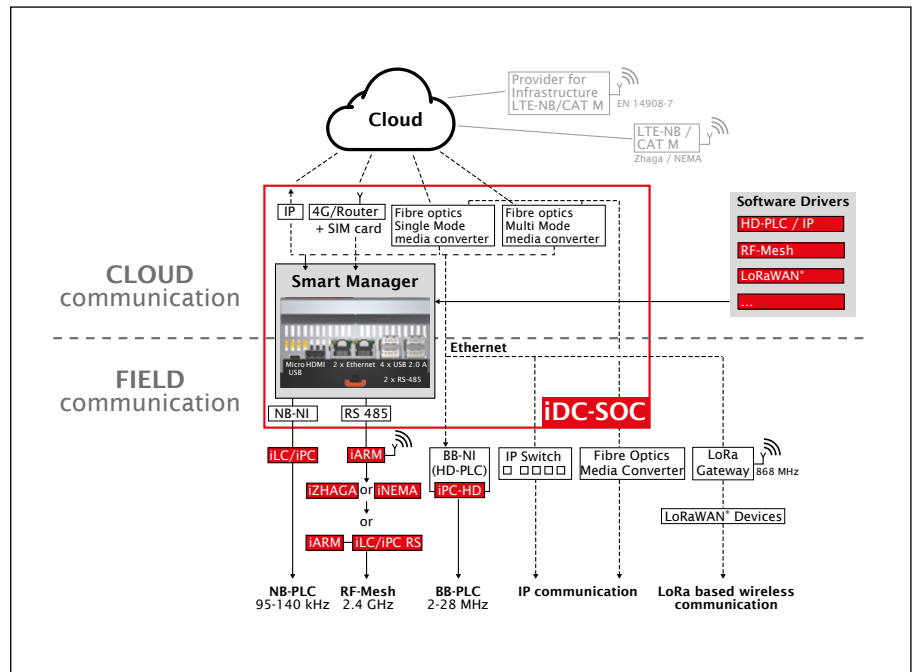
Thanks to its integrated Smart Manager, the iDC-SOC is equipped with the key applications that enable it to be integrated into a light management system.

Safe and reliable operation of the system as a whole is largely dependent on the architecture of the lighting control system.

If the transmission channel between the control technology and the iDC-SOC fails, this usually results in the subsequent failure of all downstream components. To avoid this situation, timer programs can be activated in the iDC-SOC, which are astronomically controlled and can be synchronised via SNTP with an appropriate delay to take over the task and provide redundancy.

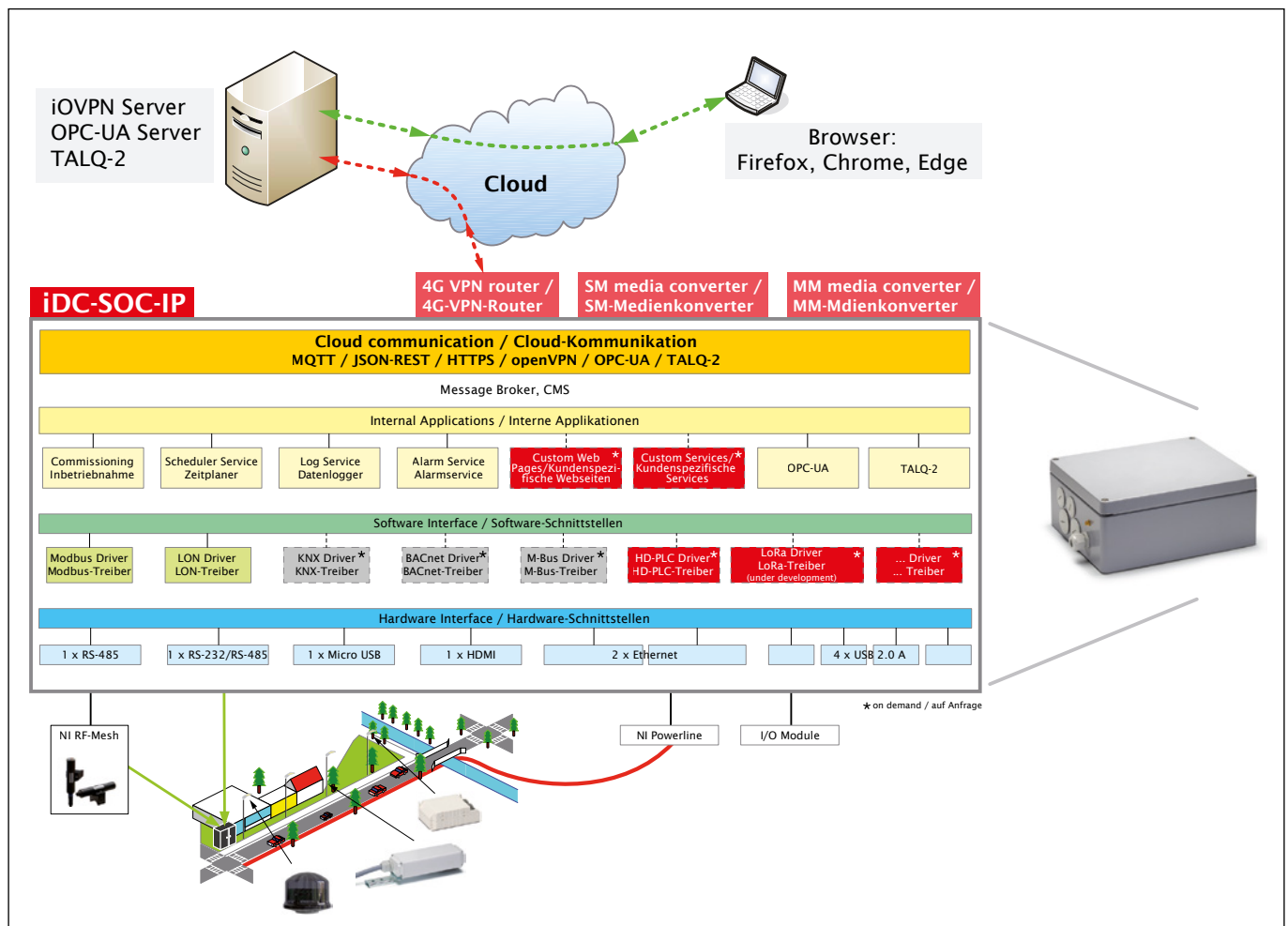
A similar safeguard is provided for recording data generated by luminaire controllers. The Smart Manager of the iDC-SOC contains locally integrated data loggers which are capable of recording generated data, even for days at a time, and can then transfer these data to the control technology, usually on a daily basis, but just as easily after a few days in the event of a communication breakdown.

Most importantly, though, no data are lost. As the system is designed for universal use, it can be configured to suit highly disparate applications. The applications shown in the chart are integral parts of the iDC-SOC's local intelligence and can be remotely configured using the available communication channels.



Functions

- **Real-time clock**
Incl. astronomical calendar; with a power reserve, synchronisable
- **Time synchronisation**
Optional via (SNTP) server; (provided technical conditions exist)
- **Timer-based control**
Planning and activation of repetitive control tasks
- **Data logger**
Monitoring of process data of the luminaire controllers
- **Alarm**
Monitoring of processes and triggering of defined actions
- **Email client**
To send predefined information
- **IO converter (only NB-IO versions)**
Conversion of digital input signals into a process date and inverse
- **Operating system**
Linux; updateable
- **Programmable**
- **openVPN client**
Connection to a secure and encrypted virtual private network (VPN) via TLS/SSL connections



Software Framework

The software framework iSOC is a web service that can run on an embedded controller, PC or enterprise system. This universal management tool for LON, Modbus and other fieldbuses, as well as optional BACnet, M-Bus and KNX, enables the commissioning and control of various systems and devices, whether wired or wireless. This makes it possible to install devices from different manufacturers using different protocols and to integrate them with one another in a simple, intuitive manner.

The software framework has an integrated web HMI tool and a user-specific web interface in accordance with the HTML5 standard. HTML5 is supported by all common browsers worldwide. HMI interfaces created with this tool are:

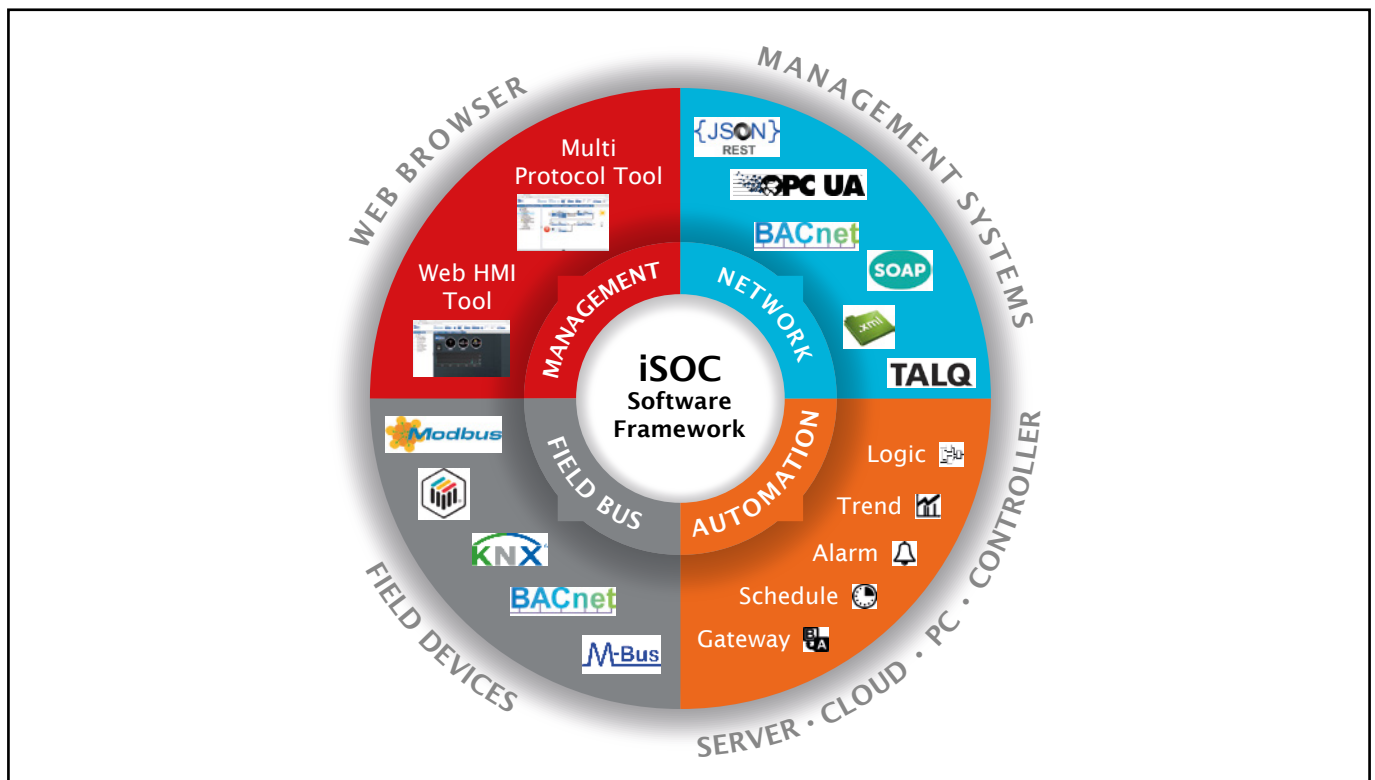
- platform-independent
- high performance
- very easy to develop
- intuitive to use
- expandable at any time
- future-proof

Protocol-independent automation objects are created for:

- Alarms (display and management)
- Trends (display and comparison)
- Time control / calendar
- Logic programming according to IEC 61131
- Gateway functions (including data conversion)

The iDC-SOC enables any type of visualisation or SCADA system to be connected via JSON/REST, OPC UA, SOAP, XML or BACnet. Using the certified iCiti TALQ app (order no. 200114) , the iDC-SOC edge controller becomes fully-fledged TALQ gateways in accordance with version 2.7.0 and, as genuine embedded TALQ gateways, seamlessly connect existing LON networks – both via powerline in accordance with EN 14908-3 and via modern wireless mesh technology – to TALQ-compatible CMS systems.

The distributed IT architecture of the connected servers can be accessed at any time via the web service. The web service can be hosted on any server under Windows, Android or Linux.



System Overview

