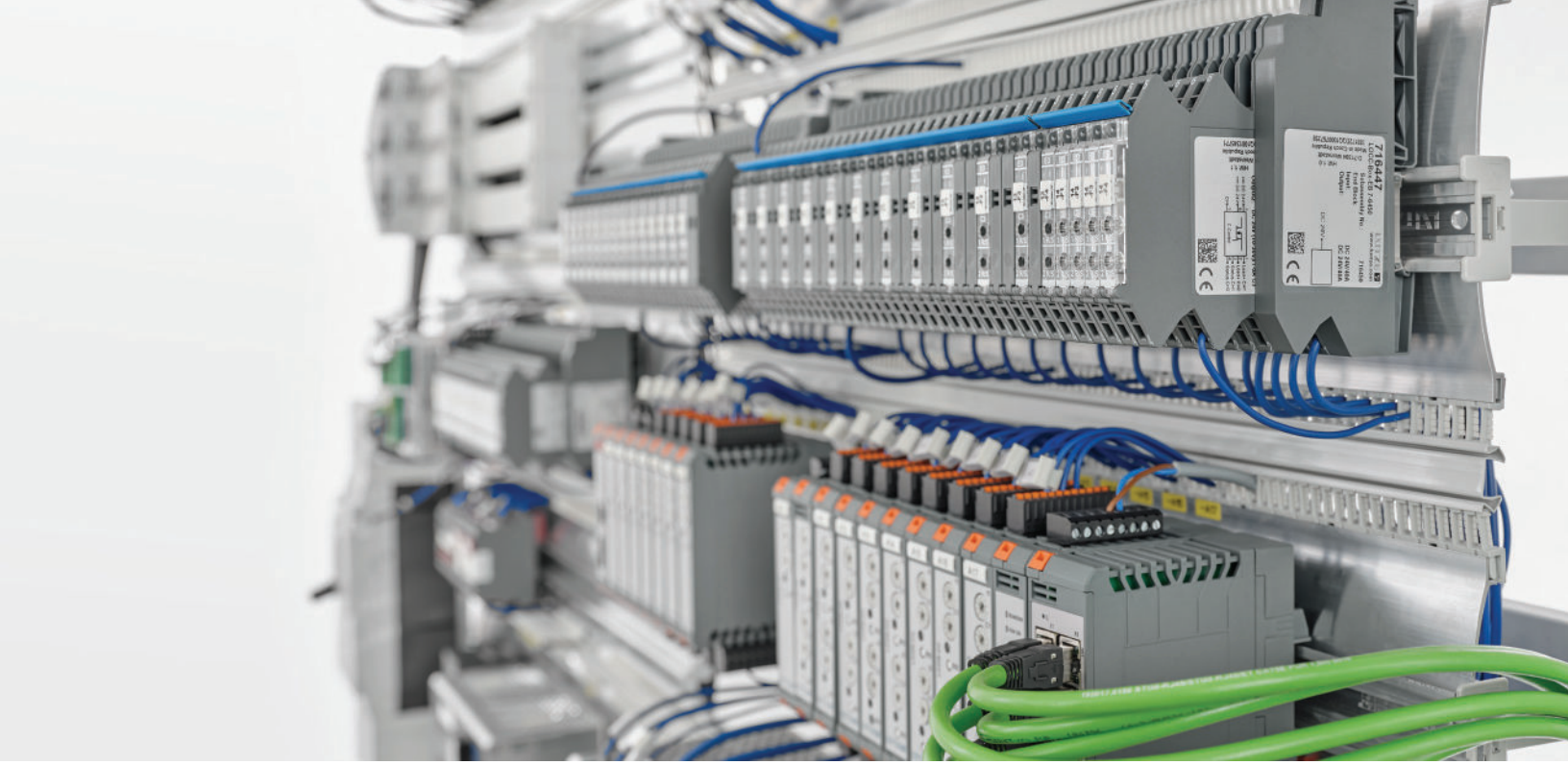


Control

LUTZE LCOS-CC
Ethernet/IP Gateway

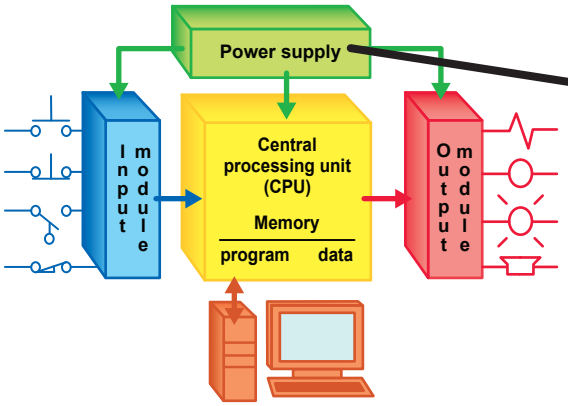
LUTZE
SYSTEMATIC TECHNOLOGY

Intelligent LOCC-Box Net + Gateway Solution

The Problem

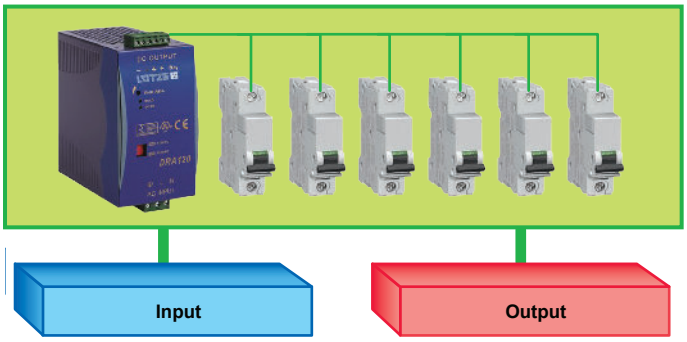
The benefits of IIoT are widely known and today's smart devices are increasingly used in new equipment throughout the manufacturing industries. But what about IIoT for thousands of older machines and deployed equipment? To update the machines, the initial thought is to add sensors or replace antiquated sensors with smarter ones. However, the decentralized control architecture on older machines makes this solution questionable due to the large number of physical locations and the time it would take to replace each unit. This would result in an extensive retrofit program, costing unnecessary downtime and thus most manufacturing organizations would forgo the undertaking and continue to operate in the outdated way.

PLC System



Most Common Power Supply Solution

- **Off the shelf standard 24V DC Power Supply**
- **Off the shelf standard 24V AC/DC Circuit Breakers**



The Solution

Instead of looking at the sensor actuator level as described above, manufacturers should take a look at the power supply level. Power supplies represent the heartbeat of the control systems, and if we were able to measure voltage and amperage, we would gain a deeper understanding of the system's condition. Furthermore, the power supply system contains multiple circuit branches allowing us to look deeper into detailed functions like a set of actuators or sensors.

In the picture above such a control circuit branch management system is shown using standard MCBs for the purpose of short circuit protection. This control system without intelligence does not provide any remote access to understand what happens on the input/output level. Additionally, such systems are known for frequent nuisance trips and a lack of overload protection.

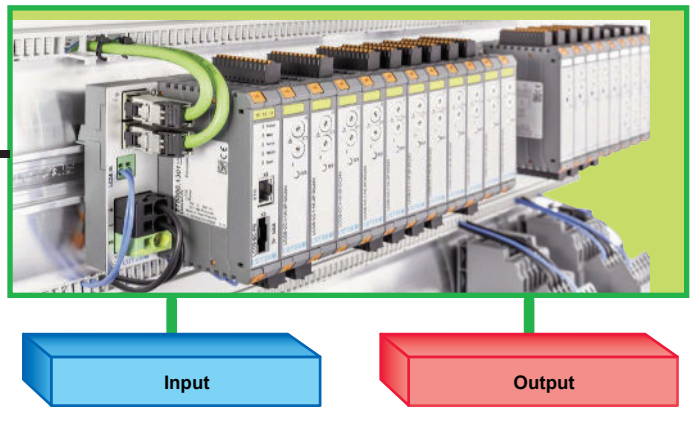
Hence, we need a "smart" MCB: A device which
- differentiates between a short circuit and an in-rush current, thus avoiding nuisance trips
- measures an overload triggering the proper trip curve, thus avoiding overheating
- measures current and voltage
- communicates with the plant floor level

The innovative solution is: LOCC-BOX Net + Gateway (Ethernet/IP, EtherCat, Profinet)

Now an IIoT retrofit becomes easy: all that is needed is to exchange the old MCBs with the LOCC-Box. Retrofitting is performed only in one location; inside the cabinet and not in the field. Existing wiring is often reusable. With minimal effort you develop a higher understanding of your equipment through remote diagnostics. And that is what IIoT is all about.

Intelligent Power Supply Solution

- **Factory Field Bus Gateway, Integrated Power Supply**
- **Intelligent Power Monitoring and Circuit Protection**

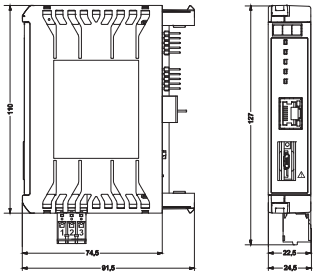


Factory Network

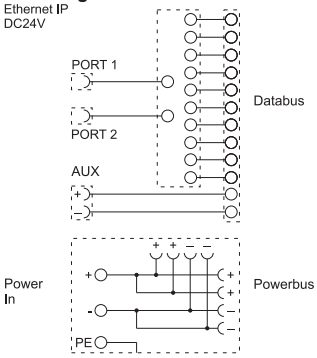
DC Monitoring Gateway

Ethernet/IP Gateway for LCOS CCI and LOCC-Box

Dimensions



PIN assignment

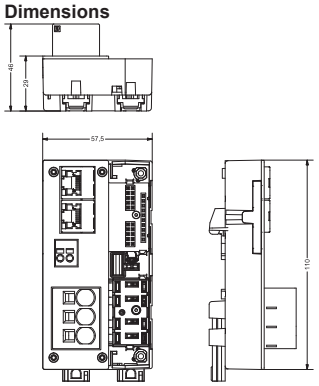


Description	Part-No.	Type	PU
Ethernet/IP Gateway			
	778000.1701	LCOS-BC-ETIP	1
Attention			
Note	**Function carrier 780770.575.1 is required and sold separately.**		
Field bus connection			
Fieldbus/Network systems	Ethernet Industrial Protocol (EtherNet/IP) acc. to IEC 61158		
BUS physics	Ethernet		
Interface mechanical	2 × Square connector 10-pin		
Transfer rate	100 Mbit/s		
Transmission standard	IEEE 802.3, 100 Base-Tx		
Communication assemblies			
BUS physics	CANopen acc. to ISO 11898-1		
Bus termination	120 Ω internal		
BUS participants	max. 120 channels or 64 functional assemblies		
BUS topology	Line		
Communication external LOCC-Boxes			
BUS physics	LIN		
Bus termination	1 K internal		
BUS participants	max. 64 functional assemblies		
BUS topology	Line		
Interface mechanical	Plug-in spring terminal 3-pin, 0.2 – 2.5 mm^2 (AWG 24 – AWG 12)		
Communication web server			
BUS physics	Ethernet acc. to IEEE 802.3 100 Base-Tx		
Transfer rate	100 Mbit/s		
Interface mechanical	RJ45 with galvanic isolation 1.5 kV		
Communication LOCC-PADS			
BUS physics	USB 2.0		
Transfer rate	480 Mbit/s (USB High Speed)		
Interface mechanical	Micro USB		
Status indication			
Status display communication	–		
General			
Nominal voltage range	DC 18 V – 31.2 V		
Power consumption	< 5 W		
Protection device	Reverse diode		
Vibration resistance	4 g acc. to EN 60068-2-6		
Shock resistance	20 g acc. to EN 60068-2-26		
Insulation voltage input / output	AC 1.5 kV_{eff}		
Installation	any condition		
Operation temperature range	-25 °C … +55 °C		
Storage temperature range	-25 °C … +85 °C		
MTBF	acc to SN29500		
Relative air humidity	20 – 95 % RH, not condensing		
Cooling	Air convection		
Color of the housing	RAL 7012 grey		
Housing material	PA 6.6 (UL 94 V-0, NFF I2, F2)		
Mounting	plug-in on function carrier with feed (FTE) 780770.575.1		
Application height	2000 m		
Protection class	IP20 (EN 60529)		
Standards	EN 61131-2:2007, EN 61000-6-2:2005, EN 61000-6-4:2007		
Approvals	CE, cULus, DNV GL, ODVA Certification		
Dimensions (w × h × d)	22.5 × 102.0 × 120.0 mm		
Weight	0.25 kg/piece		
LCOS CCI Gateway is also available for Profinet and EtherCAT protocols. Part numbers 778000.1301 and 778000.1401 to be used with matching function carriers.			

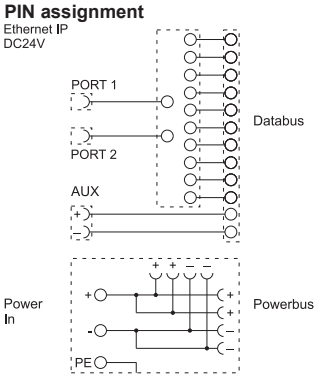
DC Monitoring Function Carrier

Ethernet/IP Function carrier with feed DC 24 V, integrated PE contact
Data bus 12-pole, Powerbus DC 24 V, 2 × 32 A
Control voltage connection: DC 24 V

Dimensions



PIN assignment

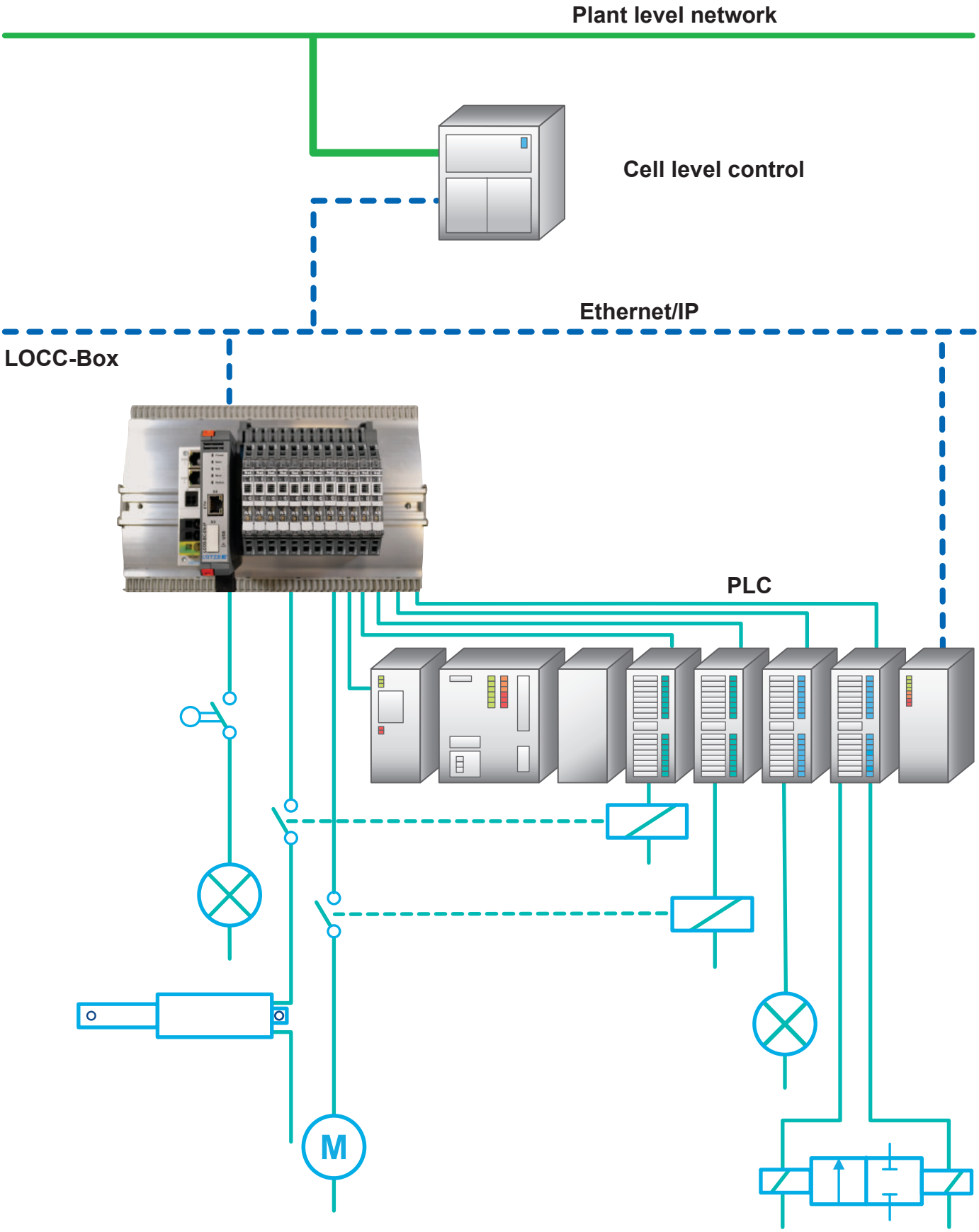


Description		Part-No.	Type	PU
Width	57.5 mm	780770.575.1	LCOS-FTE-PE-575-ETIP-00-1	1
Electrical data Power Bus		**780770.575.1**		
Operating voltage		max. AC/DC 30 V		
Operating current		max. AC/DC 32 A		
Voltage drop		<80 mV		
Connection type		Spring terminal 3×16 mm^2, 3×10 mm^2 with AE		
Connection type		Spring terminal 3×AWG 6, 3×AWG 8 with AE		
Electrical data supplementary supply				
Operating voltage		DC 18 V – DC 31.2 V		
Rated voltage		DC 24 V		
Operating current		max. DC 2 A		
Protection device		Polarity reversal protection		
Connection type input		Spring terminal 2 × 2.5 mm^2 (AWG 26 – AWG 14)		
Field bus connection				
Interface mechanical		2xRJ45 with galvanic isolation 1.5 kV		
Status indication		Link, activity		
Slots				
Slots available		1 × LCOS function housing 22.5 mm		
General				
Housing material		PA 6.6 (UL 94 V-0, NFF I2, F2)		
Color of the housing		grey		
Mounting		DIN rail mountable TS35 (EN 60715)		
Application height		2000 m max.		
Installation position		vertical		
MTBF		acc to SN29500		
Protection class		I		
Over voltage category		II		
Degree of polution		2		
Dimensions (w × h × d)		57.5 × 28.0 × 110.0 mm		
Weight		0.250 kg/piece		
Approvals		UL, CE, DNV GL		
Standards		EN 61131-2		
General ambient conditions				
Operation temperature range		-20 °C … +55 °C		
Storage temperature range		-40 °C … +85 °C		
Protection class		IP20 (EN 60529)		
Relative air humidity		5 % – 95 % without condensation		
Shock resistance		15 g 11 ms acc. to IEC 60068-2-27		
Vibration resistance		1 g acc. to EN 60068-2-8		

LCOS CCI Gateways for various protocols are designed to be used together with the matching function carriers:

Protocol	Gateway	Function Carrier
Ethernet/IP	778000.1701	780770.575.1
EtherCAT	778000.1401	780740.575.1
Profinet	778000.1301	780730.575.1

Ethernet/IP Gateway Application Example



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