



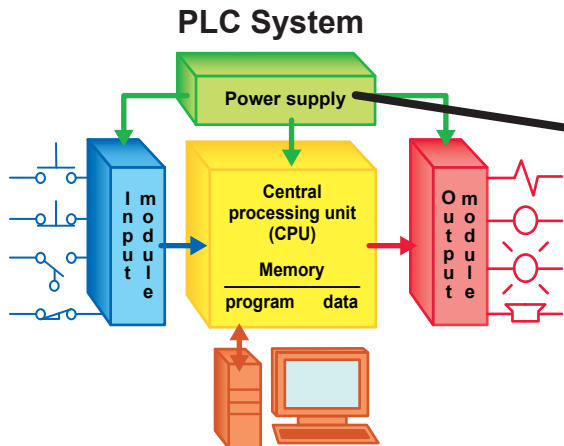
■ Control

LUTZE LCOS-CC Ethernet/IP Gateway

Intelligent LOCC-Box Net + Gateway Solution

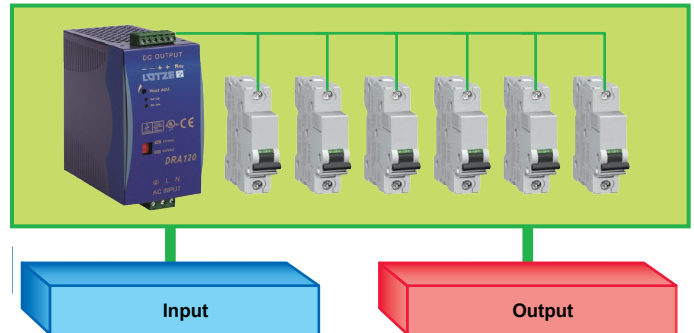
The Problem

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downtime and thus most manufacturing organizations would forgo the undertaking and continue to operate in the outdated way.



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

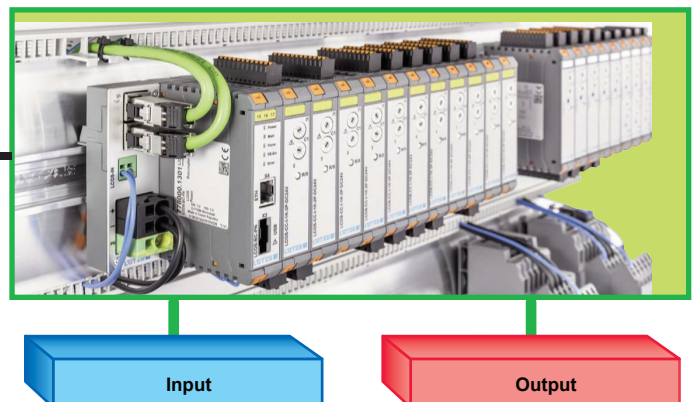
- differentiates between a short circuit and an in-rush current, thus avoiding nuisance trips
- measures an overload triggering the proper trip curve, thus avoiding overheating
- measures current and voltage
- communicates with the plant floor level

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



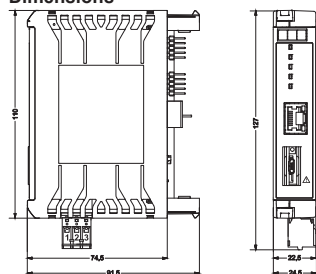
Factory Network

DC Monitoring Gateway

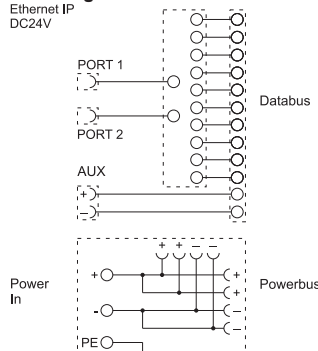
Ethernet/IP Gateway for LCOS CCI and LOCC-Box



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	–
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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.

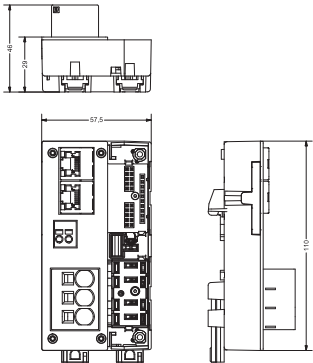
Part numbers 778000.1301 and 778000.1401 to be used with matching function carriers.

DC Monitoring Function Carrier

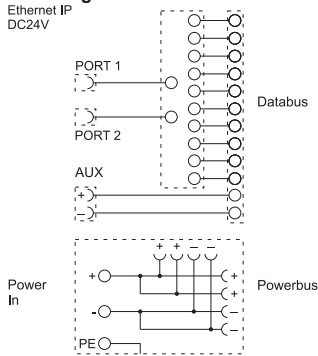
Ethernet/IP Function carrier with feed DC 24 V, integrated PE contact
Data bus 12-pole, Powerbus DC 24 V, 2 × 32 A
Control voltage connection: DC 24 V



Dimensions



PIN assignment

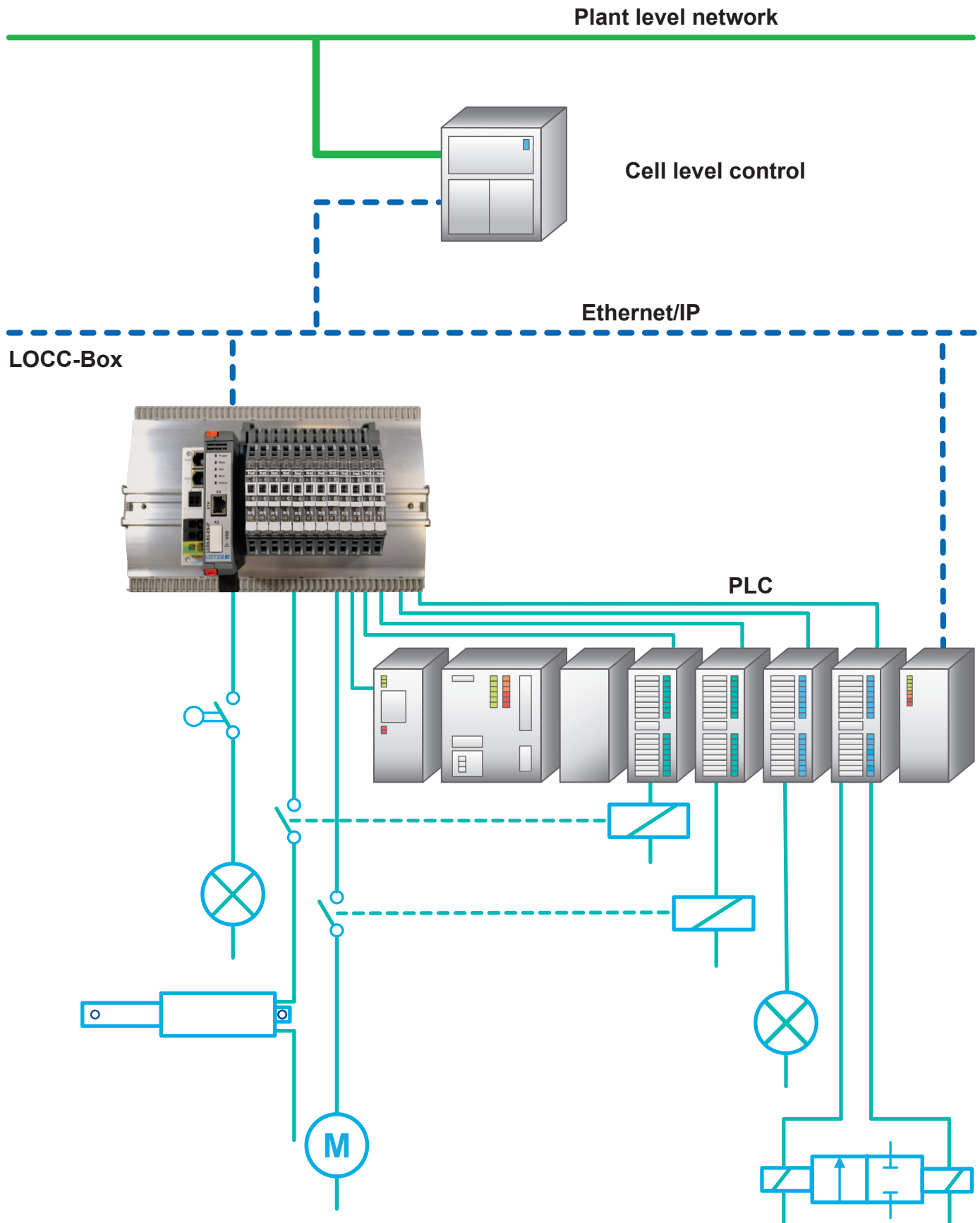


Description	Part-No.	Type	PU	
Width	57.5 mm	780770.575.1	LCOS-FTE-PE-575-ETIP-00-1	1
Electrical data Power Bus				
780770.575.1				
Operating voltage	max. AC/DC 30 V			
Operating current	max. AC/DC 32 A			
Voltage drop	<80 mV			
Connection type	Spring terminal 3×16 mm ² , 3×10 mm ² with AE			
Connection 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 mm max.			
Installation position	vertical			
MTBF	acc to SN29500			
Protection class	I			
Over voltage category	II			
Degree of pollution	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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