



Extract from our online catalogue:

## IPC-25/CU/M18

Current to: 2016-11-18



The ipc sensors are available as a two switched outputs, a one analogue output and a combined one analogue plus one switched output version.

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## HIGHLIGHTS

- › Analogue output plus 1 pnp switching output in M18 design
- › Automatic synchronisation › for simultaneous operation of up to ten sensors in close quarters

## BASICS

- › 2 switching outputs in pnp or npn variant
- › Analogue output 4–20 mA or 0–10 V
- › Analogue output plus 1 pnp switching output
- › microsonic Teach-in on pin 5
- › 0.08 mm resolution
- › Temperature compensation
- › 10–30 V operating voltage
- › LinkControl › for configuration of sensors from a PC

# Description

## The sensors of the lpc sensor range

have an extremely narrow beam spread with an operating range of 250 mm and a maximum range of 350 mm. The blind zone amounts to a mere 30 mm.

### 3 output versions are available:



2 switching outputs, optionally in pnp or npn circuitry



1 analogue output 4–20 mA and 0–10 V



1 analogue output with an additional pnp switching output

### Via pin 5 at the circular connector,

the lpc sensors are set (Teach-in): If pin 5 is connected to  $+U_B$ , the D1 switched output is set; if pin 5 is connected to  $-U_B$ , the D2 switched output is set. With the sensor version with analogue and switched output, the analogue output is set with pin 5 connected to  $+U_B$  and the switched output is set with pin 5 connected to  $-U_B$ .

### Two yellow LEDs,

which are laterally arranged at the M18 threaded sleeve, indicate the sensor output states and support the Teach-in procedures.

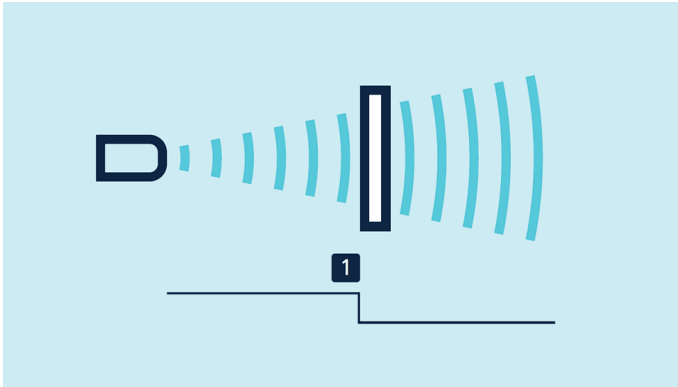
### The lpc sensors with switched output

have three operating modes:

- › Single switching point
- › Two-way reflective barrier
- › Window mode

### A single switching point is set by:

- › positioning the object to be detected within the desired distance (1) to the sensor,
- › connecting pin 5 to  $+U_B$  (for switched output D1) or  $-U_B$  (for switched output D2) for about 3 seconds until both LEDs flash,
- › once more connecting pin 5 to  $+U_B$  (for D1) or  $-U_B$  (for D2) for about 1 second until the corresponding LED go out.



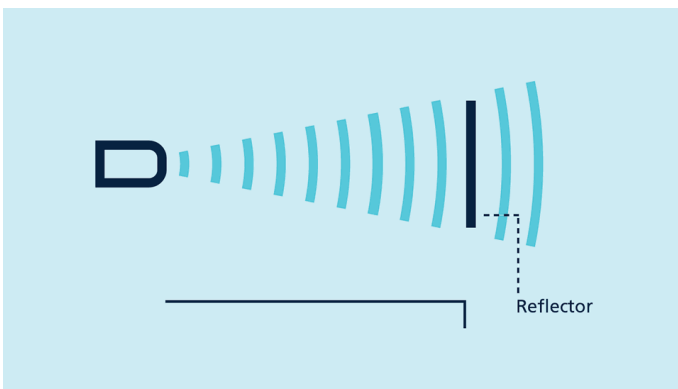
*Teach-in of a switching point*

### A two-way reflective barrier

can be very easily set with the help of a permanently mounted reflector. The Ipc sensor is set up in window mode in such a way that the fixed reflector lies within the window.

The two-way barrier is taught to the D1 switched output by:

- › connecting pin 5 to  $+U_B$  for about 3 seconds until both LEDs start to flash,
- › once more connecting pin 5 to  $+U_B$  for about 10 seconds until LED 1 remain lit.



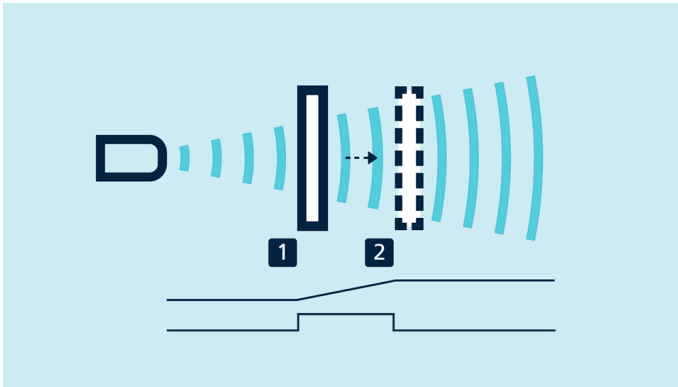
*Teach-in of a two-way reflective barrier*

Now, the two-way reflective barrier has been set. The D2 switched output can be set in the same way by connecting pin 5 to  $-U_B$ .

### The analogue output is set by:

- › initially positioning the object to be detected on the sensor-close window limit (1),

- › connecting pin 5 to  $+U_B$  for about 3 seconds until both LEDs start to flash,
- › shifting the object to the sensor-far window limit (2),
- › once more connecting pin 5 to  $+U_B$  for about 1 second until LED 2 go out.



*Teach-in of an analogue characteristic curve or a window with two switching points*

### To set a window

with two switching points on a single switched output, the procedure is the same as setting the analogue.

### The NCC/NOC function and the rising/falling analogue characteristic

can also be set via pin 5.

### A synchronisation

of up to ten lpc sensors is possible thanks to the integrated self-synchronisation:

- › First, set the sensors in accordance with the above-described Teach-in procedures.
- › Then, switch pin 5 to the synchronisation mode by:
  - disconnecting the sensors' supply voltage,
  - connecting pin 5 to  $-U_B$ ,
  - reconnecting the supply voltage,
  - disconnecting pin 5 from  $-U_B$  as soon as LED 2 starts to flash rapidly,
  - applying pin 5 to  $-U_B$  to activate the self-synchronisation and
  - waiting 10 seconds.
- › Once the synchronisation mode has been activated for all sensors, the sensors must be electrically interconnected via pin 5.

All connected sensors are now automatically synchronised via pin 5. In synchronous mode, all lpc sensors implement their measurements accurately simultaneously. This prevents mutual interference. With a respectively narrow mounting distance between the sensors, a synchronised sensor can also receive echo signals from an adjacent sensor. This can, for example, be exploited to broaden the sensors' detection zone. With this, the sensors form a sensor line.

If more than ten sensors must be synchronised, this can be carried out with the SyncBox1, which is available as an accessory.

### The default settings

of the lpc sensors can also be restored via pin 5.

### LinkControl

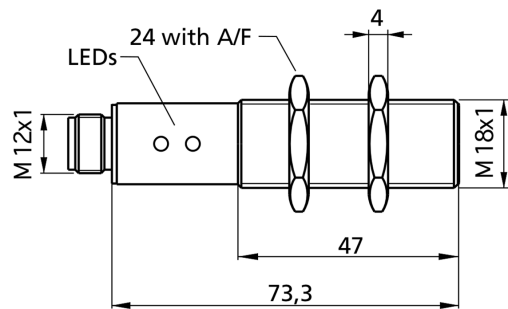
consists of the LinkControl adapter and the LinkControl software and facilitates the setting of the lpc sensors with the help of a PC or notebook running any conventional Windows® operating systems. Switching points, analogue characteristic and a multitude of further settings can be read out, edited on the PC, buffered and written back to the sensor. Particularly the two measurement plotters for distance value visualisation support the development of solutions for complex automation tasks .



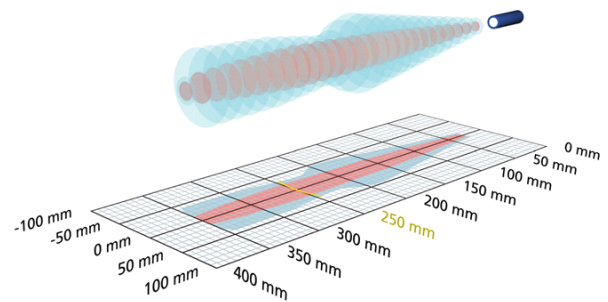
*LinkControl adapter for lpc sensors, LinkControl adapter*

# lpc-25/CU/M18

## scale drawing



## detection zone



1 x analogue 0-10 V



350 mm

operating range	30 - 350 mm
design	cylindrical M18
operating mode	analogue distance measurements

## ultrasonic-specific

means of measurement	echo propagation time measurement
transducer frequency	320 kHz
blind zone	30 mm
operating range	250 mm
maximum range	350 mm
resolution/sampling rate	0,069 mm bis 0,078 mm, abhängig vom eingestellten Analogfenster
reproducibility	± 0.15 %
accuracy	± 1 % (temperature drift internally compensated)

## electrical data

operating voltage $U_b$	10 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	≤ 40 mA
type of connection	5-pin M12 initiator plug

# lpc-25/CU/M18

## outputs

output 1	analogue output voltage: 0-10 V, short-circuit-proof switchable rising/falling
response time	24 ms
delay prior to availability	< 300 ms

## inputs

input 1	com input teach-in input
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## housing

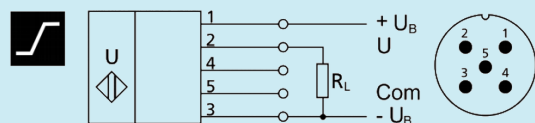
material	brass sleeve, nickel-plated, plastic parts, PBT
ultrasonic transducer	polyurethane foam, epoxy resin with glass contents
class of protection to EN 60529	IP 67
operating temperature	-25°C to +70°C
storage temperature	-40°C to +85°C
weight	43 g
further versions	stainless steel high chemical resistance

## technical features/characteristics

temperature compensation	yes
controls	com input
scope for settings	Teach-in via com input on pin 5 LCA-2 with LinkControl
Synchronisation	yes
multiplex	no
indicators	1 x LED yellow: object in the window

## documentation (download)

### pin assignment



order no.

**lpc-25/CU/M18**