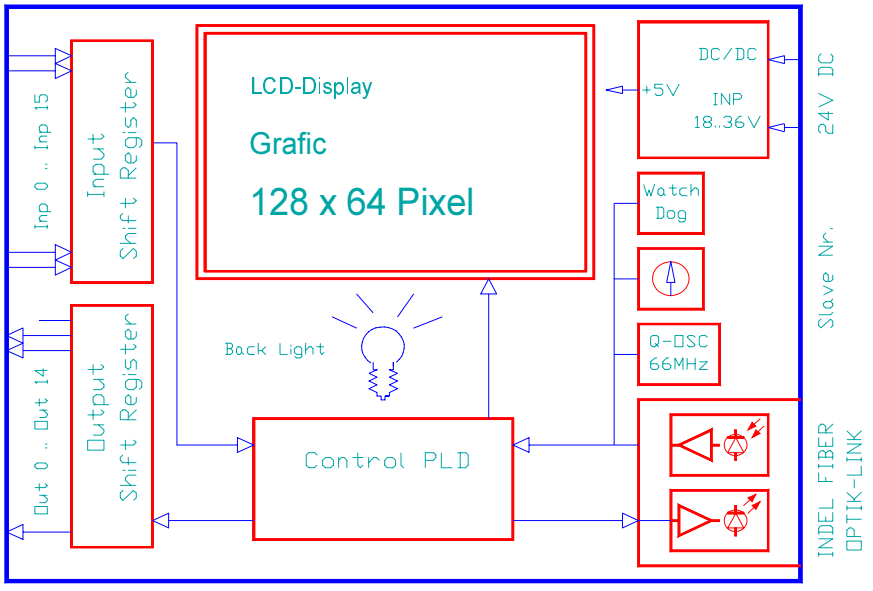
LCD-Controller

INFO-LCD

Operator Panel
Teach-in Box

The INFO-LCD includes a graphic-enabled LCD display and 16 digital inputs and outputs. The display allows a maximum of 8 lines of 21 characters each to be shown.
The digital inputs and outputs allow an operator keypad to be controlled.
The board is designed for pcb mounting, allowing it to be very flexibly incorporated, say, in operator panels of widely varying size and design.
The display is available as required with or without background illumination.
The casing shown is provided with 12 keys, a rotary switch, a key-operated switch and an EMERGENCY OFF button.
Other casing forms are available as needed.



Technische Daten

LCD display
- Maximum 8 panels per INFO-Link
- Monochrom
- 128 x 64 pixels (1kByte)
- 8 x 21 characters
  (8 x 7 pixels per character)
- Refresh rate: 1 ... 4 times per s
- Background illumination

16 inputs
- 24V inputs, 24V

16 outputs
- 24V, open collector
  for lamps
- One output is reserved for the background illumination.

Scope of supply
- Display with INFO-Link interface without casing

Order No. INFO-LCD 97254

INDEL AG
INDUSTRIELLE ELEKTRONIK

Function

Display

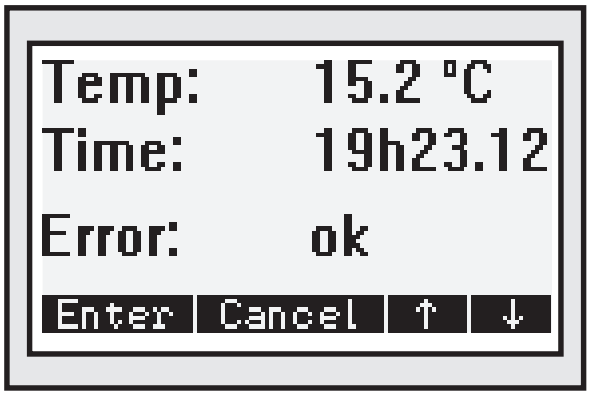
The LCD display is supported by field bus masters with PowerPC processors (INFO-PPC, INFO-PCI, INFO-SAM). The display is refreshed twice per second. The graphic-enabled LCD display allows bitmaps and lettering to be represented simultaneously. 8 lines at 21 characters (characters : 8 x 7 pixels).

Software

PC field bus master, max. 6 displays: The display contents are managed on the PC platform. The different masks are stored on the hard disk of the PC. Control of the display, e.g. updating of temperatures, error message output, etc. is performed from the visualization system. The display data is copied in the form of a bitmap to the dual port RAM of the field bus master via software functions. In other words, no storage space is required in the field bus master; the image data is continuously read from the DP-RAM and transferred via the INFO-Link to the LCD module. Maximal 6 displays can be operated in this way.

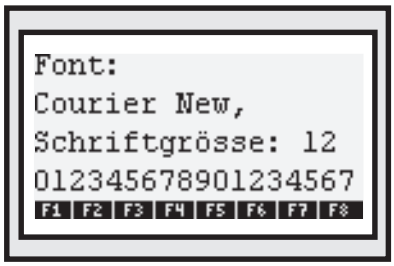
PC master, Stand-alone master, with max. 8 displays: In this case, it is mandatory to reserve 1 kByte of storage space in the field bus master for each display mask.
The different image masks are then saved in the field bus master.
The transfer of the individual display contents is performed by the operating system. All that users need to do is to write on the storage areas with the appropriate bitmap.

Display

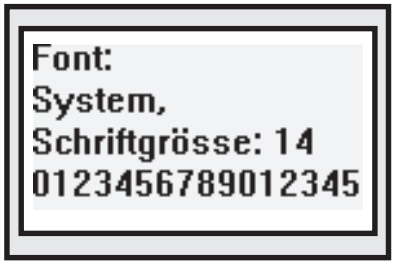


Original size

Smallest font: 8 x 7 pixels with which the entire alphabet can be represented.

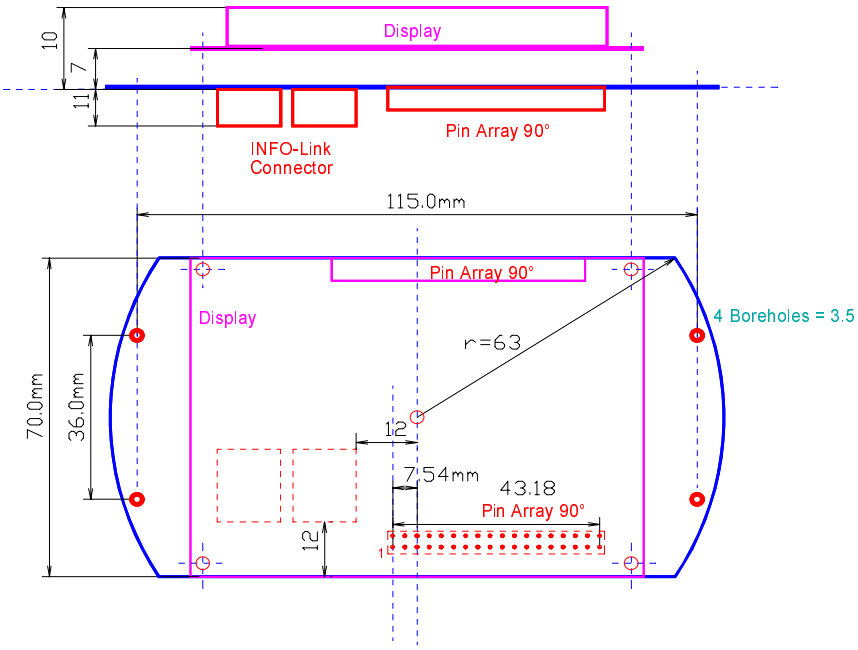


Smallest representable font 6 x 4 pixels, only upper-case letters and numerals (see footbar)

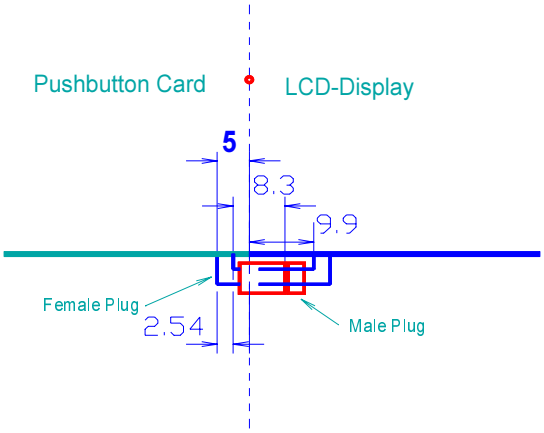


4 x 16 characters with font size 14

Dimensioning



Dimensioning of display pcb



Dimensioning of the jack strip for optional keyboard pcb

Function

Fonts

The software interface included in the supply offers all true-type fonts installed on the PC in all possible font sizes as well as in bold and italics. (Also cyrillic fonts.)

Graphics

The display is fully graphics-enabled. Text and bitmaps can be combined as required.

Keyboard pcb

15 outputs (24V) and 16 inputs (24V) are available on the display pcb. The outputs are sized for illuminated keys. One output is reserved for the background illumination of the display. Suitable keyboard pcb layouts can be customized. (See pages 6,7)

Mounting

The board is designed for mounting in existing devices or casings. Please observe the sketches opposite.

Casing

The casing shown is provided with 12 keys, one rotary switch, one key-operated switch and an EMERGENCY OFF switch. The LCD display may also be incorporated in other casings.

Connectors

Mating part for pin array (connector 1):
Twin-row jack array,
90° angled
available from COMPONA
Order No. 2x36pin 509 255-3

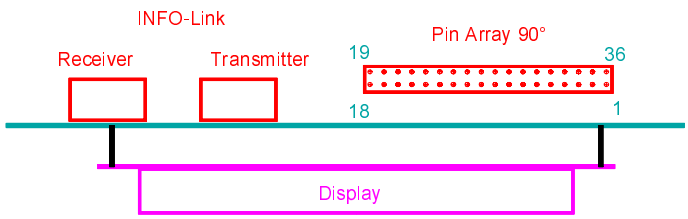
Connector Allocations

1	I	24V	36	I	24V
2	I	0V	35	I	0V
3	I	Inp 0	34	O	Out 0
4	I	Inp 1	33	O	Out 1
5	I	Inp 2	32	O	Out 2
6	I	Inp 3	31	O	Out 3
7	I	Inp 4	30	O	Out 4
8	I	Inp 5	29	O	Out 5
9	I	Inp 6	28	O	Out 6
10	I	Inp 7	27	O	Out 7
11	I	Inp 8	26	O	Out 8
12	I	Inp 9	25	O	Out 9
13	I	Inp 10	24	O	Out 10
14	I	Inp 11	23	O	Out 11
15	I	Inp 12	22	O	Out 12
16	I	Inp 13	21	O	Out 13
17	I	Inp 14	20	O	Out 14
18	I	Inp 15	19	-	NC

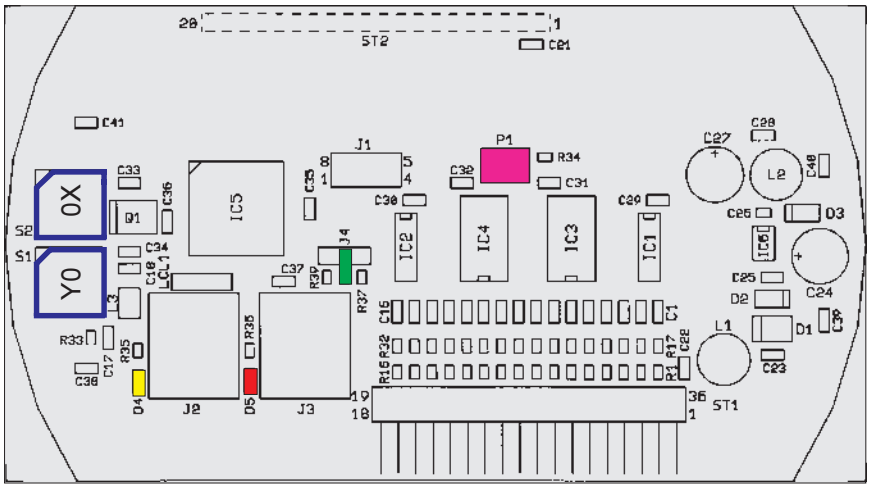
Connector 1

pin array
90° angled

Pin allocation



Assembly



Addressing (blue)

Keypad pcb, equal to an INFO-16p board:

Switch 0X	I/O board
0	0
...	...
F	15

Display

Switch Y0	Display
0	0
...	...
7	7

Transmission power jumpers (green)

The jumpers influence the light intensity of the emitting LED and thereby the segment length of the fiberoptic cable to the next board.

Segment length	Jumper position
0 ... 10m	no jumper
8 ... 30m	>10
20 ... 50m	>30

LEDs on receiver module

LED-red = +5V supply
LED-yellow = INFO-Link receiver signal OK

Contrast (violet)

This potentiometer allows the contrast of the LCD display to be varied.

Specifications

Power supply

- Voltage: +18 ... 36V,
- Power consumption: 180mA max (incl. background illumination, without key illumination)

Climatic conditions

- Ambient temperature:
  Storage: -20...+80°C
  Operation: 0 ... +45°C
- Board temperature:
  Operation: 0...+70 °C
- Relative air humidity
  No condensation: 95%

LCD display

- Maximum 8 panels per INFO-Link
- Monochrom
- 128 x 64 pixels (1kByte)
- 8 x 21 characters (8 x 7 pixels per character)
- Refresh rate: 1 ... 4 times per s
- Background illumination

Inputs

- 16 inputs
- Voltage: 24V
- Current: 5mA
- Switching threshold: 10V

Outputs

- 15 outputs
- Voltage: 24V
  Open collector
- Max. continuous current per output: 100mA

Customized modifications are available as necessary.

Connections

Board power supply

For the board power supply, a 3-phase rectifier without electrolytic capacitor is sufficient. But to prevent interference, a electrolytic capacitor of 4,700 ... 10,000µF is recommended. The 24V power supply must pass through a line filter.
On the customized keypad pcb, EMC measures must be provided for filtering the 24V supply and all other connections.
(See page 7)

Screened lines

If the connections to the pcb array (connector 1) are installed outside the control cabinet, they must be provided with screening.

Grounding

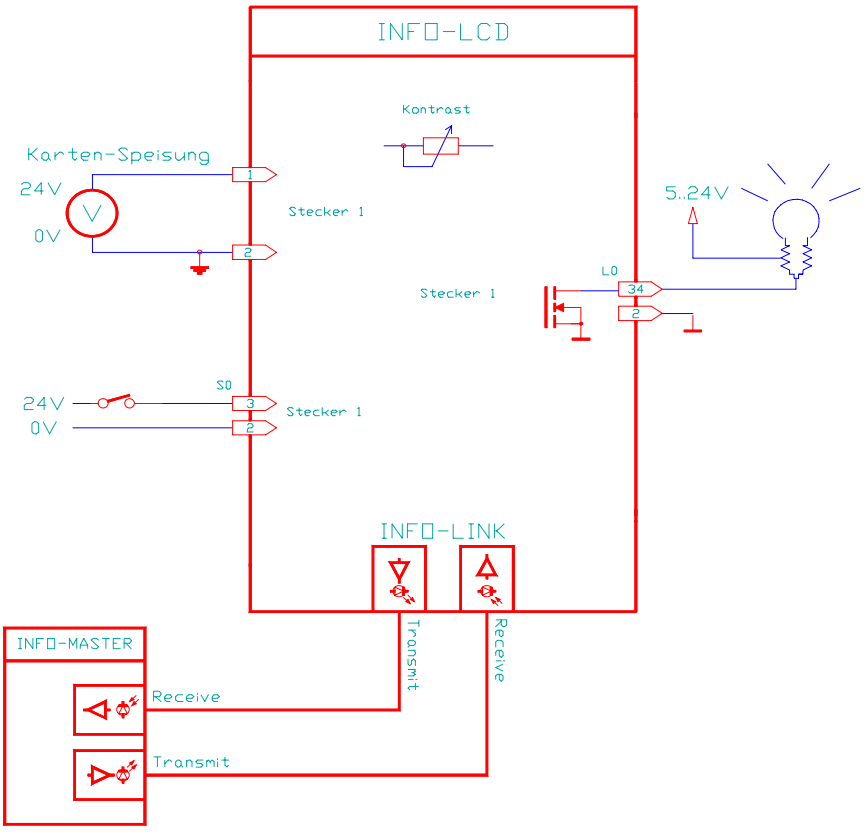
The power supply of the LCD board is not electrically isolated. The ground layer is connected via interference suppression capacitors with ground potential. This must be taken into account in the grounding concept of the machine or plant. The ground connection is established via the four fastening screws. These must be connected with the grounded casing so as to ensure good conduction. (Use metallic bolts.)

Casing

The INFO-LCD board is only allowed to be incorporated in casings offering adequate EMC protection, especially from electrostatic discharges (ESD). A conductive paint layer inside the casing is sufficient.
If it is ensured that electrostatic discharges will not occur through the display frame, it is unnecessary to install an electrically conductive protective glass over the display.
The screen must be connected with the casing so that contact is established around the entire circumference.

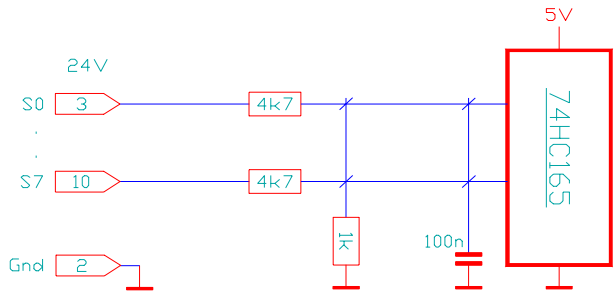
See also INDEL wiring guidelines and INDEL design guidelines.

Connection Example

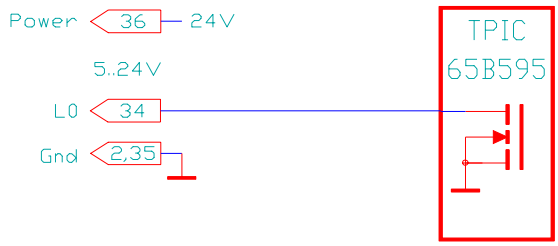


Interfaces

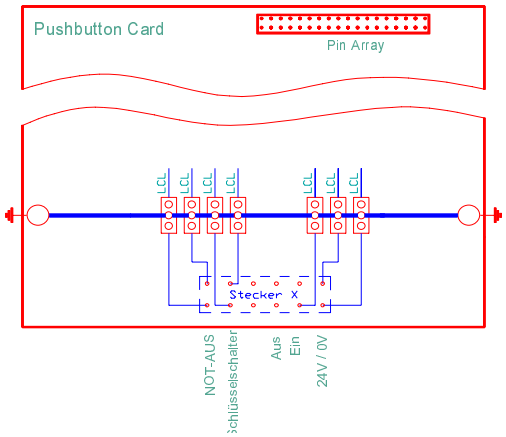
Inputs



Outputs



Filtering



Connection

Inputs

Connection of the inputs. The supply voltage for the inputs can be drawn from the board power supply.
(+18V ... 36V)

Outputs

Open collector outputs up to max. 24V

EMC measures

All connection lines leading to the optional keypad pcb must be filtered against electromagnetic interference. (See sketch on filtering)

LCL filter from TDK (Elbatex AG):
Type: ZJSC1RO-103TA,
2.3MHz cutoff frequency