

# Description

## Transmitter:

## LWLS1



## Receiver:

## LWLE2



## **Light Wave Fiber in general**

By a transmitter (LWLS1) and a receiver (LWLE2) can be send 4 digital TTL-Signals from 1 detector. The moduls are made for mounting in a switchboard. For optical plug-connection are used ST-plug. On the electrical side there a thred-connectors and a 9pole Sub-D-socket. The dimensions of a module (HxB) are 79 x 40 mm. The depth to the mounten plat is 90,5 mm.

The max. length is 400 m. The signals of the detector from 0,5µs can be sendd surely. The light wave length is 820 nm.

## **Transmitter LWLS1**

The transmitter modul LWLS1 contains three fiber-transmitter and one fiber-receiver. The power supply +5V can be used from the detector or from the screwed contact. The middle current consumption is about 250 mA. The connection between the detector and the transmitter is a shielded cable with a Honda MR20 RMAG to a 9pole Sub-D-socket. The possible signals are PCA, PCB or PCU, PCD and alert as transmitter and reset as receiver. The operating temperature should between 0-55°C.

## **Receiver LWLE2**

The receiver modul LWLE2 contains three fiber-receiver and one fiber-transmitter. The power supply +5V can be used from the counting unit or from the screwed contact. The middle current consumption is about 180mA. The connection between the counting unit and the receiver is a shielded cable with a 9pole Sub-D-socket. The 4 signals are equal to the signals of the transmitter. In addition the invers signals of A and B are available. It is equivalent to the RS422 standard. The operating temperature should between 0-55°C.

## **Length of fiber-transmission line**

The fiber line connects the LWLS1 to the LWLE2 surely over the whole temperature (-40° to +85°C) until 400m (worst case). The fiber cable is a cable with a high mechanical protection. We use normaly a cable with 12 fibres lines inside. One cable is used for 2 detectors. 4 fiber lines are for spare. The fibre is a 50/125 µm multimode-gradiant-fibre. The connection of the fibres is done by ST-plugs.

## **Length of fiber-transmission line, technical dates**

Optical power budget : MIN 4,2 dB (by 50/125 µm fibre, -40°C to 85° C, until 5 Mbaud, from HP-databook)

Max. damping range:

1000m fiber by 850 nm      2,7 dB

ST-plug                              0,3 dB

ST-plug                              0,3 dB

Sum of the damping of the whole transmission line: 3,3 dB

### Connectors from LWLS1 and LWLE2

Function	Transmitter LWLS1 9pin-Sub-D socket	Receiver LWLE2 9pin-Sub-D-plug
+ 5 V	1	1
Reset	2	2
*Alarm	3	3
NC	4 (NC)	4 (NC)
0 V	5	5
PCA	6	6
PCB	7	7
*PCA	8 (NC)	8
*PCB	9 (NC)	9

\* = Reverse signal

NC = Not connected

Use a RS422 standard receiving circuit (PCA/\*PCA and PCB/\*PCB)

Cable length max.: 20m

Use a 5V TTL standard receiving circuit (\*Alarm and Reset)

Cable length max.: 3m

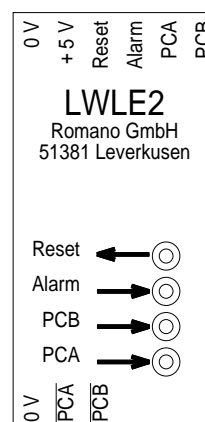
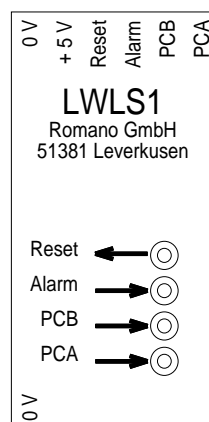
**Use only the Sub-D-plug with shield cable for the transmission of the output signals.**

**The screw terminal are only for power supply and for test points.**

When the power is supplied through the output connector, make sure that the voltage at the LWLE2 input terminal is +5V to 5,3V

**The Output signals PCA /\*PCA and PCB /\*PCB must tranceive by twistet pair to improve noise immunity.**

screw terminals:



Signals and break downs of the connection of the detector MD20A with fiber.

signal	LWLS1 electrical signals	LWLS1 optical signals	LWL-cable	LWLE2 optical signals	LWLE2 electrical signals
PCA	+5V	On	⇒	On	0V
	0V	Off	⇒	Off	min. +3,2V
*PCA	0V	On	⇒	On	min. +3,2V
	+5V	Off	⇒	Off	0V
PCB	+5V	On	⇒	On	0V
	0V	Off	⇒	Off	min. +3,2V
*PCB	0V	On	⇒	On	min. +3,2V
	+5V	Off	⇒	Off	0V
Alarm	+5V	On	⇒	On	min. +3,2V
	0V	Off	⇒	Off	0V
Reset	min. +3,2V	Off	←	Off	+5V
	0V	On	←	On	0V

Signals	Outputsignal of LWLE2
*PCA	180° to PCA
*PCB	180° to PCB
Alert (L-activ)	non inverted
Reset (L-activ)	non inverted

Breakdown	Result
power supply +5V -10%	none
power supply +5V of the MD20 <3,5 V	alert (H → L)
LWL of PCA is interrupted	pulse H,L → L non to see
LWL of PCB is interrupted	pulse H,L → L non to see
LWL of alert is interrupted	H → L = alert
LWL of Reset is interrupted	MD20A no resettig possible
power supply of LWL is interrupted	H → L = alert
cable between MD20A and LWLS1 is interrupted	H → L = alert

**On the transmission line for the alert-signal normaly will be sendet light to get the highest security for the transmission. Pay attention to the connection to the LWLS1 from MD20 the negert alert-signal (alert of Pin 13).**

Please pay attention by building in the transmitter LWLS1 and receiver LWLE2

- Check the LWLS1 or LWLE2 for transport damages
- Check if the ST-plugs are 100% clean (all sides transmitter – cable – receiver)
- Check if the connection of the St-Plugs is straight and correct adjusted
- We recommend to check the damping rate of the fiber optic cable
- We recommend to use a special power supply for the transmitter LWLS1
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