







## VSU 12

### Technical description

#### General Information

The ultrasonic system for splice detection consists of a VSU 12/4... evaluation amplifier and a DB 18 UP ultrasonic sensor pair. It mainly detects splices on paper, plastic or metal web used on roll machines.

#### Mounting

Transmitter and receiver (DB 18 UP) have the same construction and are to be mounted at an angle of  $60^\circ (\pm 5^\circ)$  relative to the sheet.

The distance between transmitter and receiver should be 30mm ( $\pm 5$ mm).

Exact alignment ( $\pm 1^\circ$ ) must be ensured. Alignment which is not in line with the axis results in a reduction of the working range.

The material to be scanned must be located approx. 8 ... 10mm above the transmitter.

The pitch of the sensors should be parallel to the tape or, as the case may be, splices.

#### Function

The evaluation unit can be operated in two different modes.

##### a) Parameter switch S1 in position "0" (paper)

The sheet is either paper or cardboard.

##### b) Parameter switch S1 in position "1" (foil)

The sheet is either plastic or metalised foil.  
The amplifier has a higher sensitivity.

The changeover from "paper" to "foil" can also be performed via PIN 5 "Paper/Foil". Low-level on connection 5 means "paper", high-level ( $\geq 8$ V) on connection 5 means "foil". The parameter switch **S1** must be in position **0** "paper" in order to use this feature (state on delivery).

#### Sensitivity adjustment

Inhomogenities in the sheet material may cause interference in the detection of glued seams. These interferences may generate signals even without the presence of a glued seam. This interference may be minimised by decreasing the sensitivity via potentiometer **P2** (anticlockwise turn). A **P2** that is turned fully clockwise corresponds to maximum sensitivity (factory setting).

#### Operation VSU 12/4.1

The VSU 12/4.1 evaluation unit automatically adapts to the acoustic transmissivity of the medium. As soon as a splice is detected, the "splice detected" output (tape) is triggered. The duration of the output signal can be set via the potentiometer (pulse stretching) **P1**. The maximum time which can be set is 200ms. A detected splice is indicated on LED **C**.

If the level is not sufficient for reliable detection, the "Material not detectable" output (Level under Limit) is triggered. This is also signalled by the red flashing LED **A**.

#### Operation VSU 12/4.2

The VSU 12/4.2 evaluation unit automatically adapts to the acoustic transmissivity of the medium. As soon as a splice is detected, the "splice detected" output (tape) is triggered. The duration of the output signal can be set via the potentiometer (pulse stretching) **P1**. The maximum time which can be set is 200ms. A detected splice is indicated on LED **C**.

If the level is not adequate for reliable detection, this is indicated by the red, flashing LED **A**. As soon as the system detects a paper tear or if no material is present between the sensors, this is indicated at PIN 2 via the PNP output.

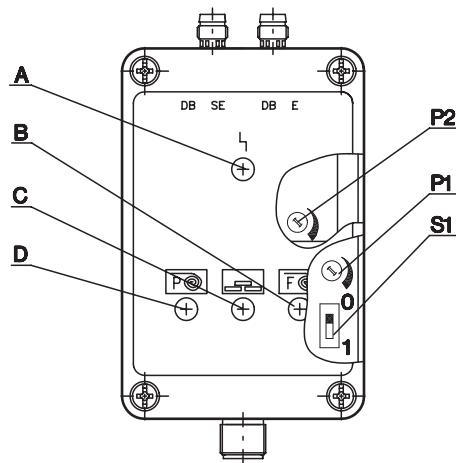
## Controls and indicators

### Display

(see Specifications)

### Adjustment

(see Specifications)

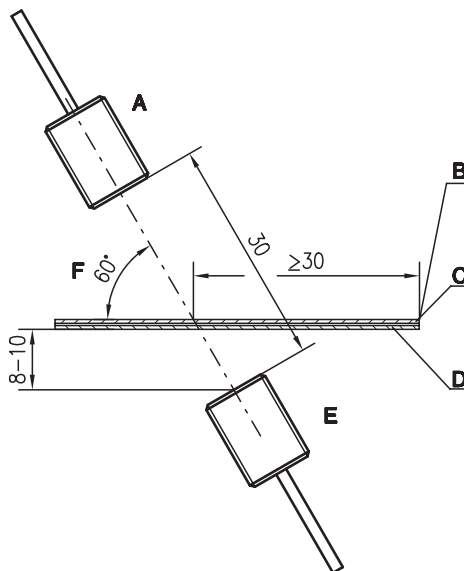


- A** LED red
- B** LED green
- C** LED yellow
- D** LED green
  
- P1** Potentiometer  
0 ... 200ms pulse stretching
- P2** Potentiometer  
sensitivity adjustment
- S1** Foil/Paper switch  
0 = paper  
1 = foil

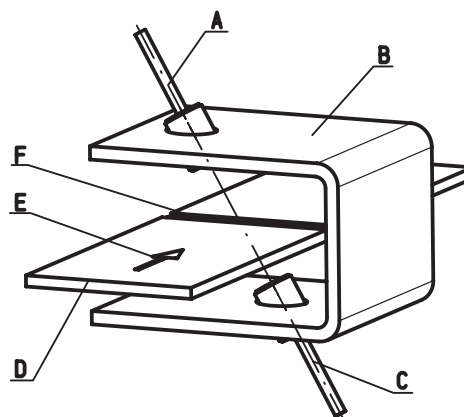
## Installation and Remarks

### Note

- When aligning the sender and receiver, the best possible alignment must be ensured.
- For proper function, the sensors must be positioned at an angle of  $F = 60^\circ (\pm 5^\circ)$  relative to the web.



- A** Receiver
- B** Outer edge
- C** Tape min. 15mm wide
- D** Paper or foil web
- E** Transmitter
- F** Pitch relative to the direction of travel



- A** Receiver
- B** Holder
- C** Transmitter
- D** Paper or foil web
- E** Direction of travel
- F** Splice