Sitronic

Infrared Light Curtain Profiling System

MSH-1-4000
MSH-1-5000
MSH-2-4000
MSH-2-5000

MSH LOG PROFILING (MEASURING) SYSTEM

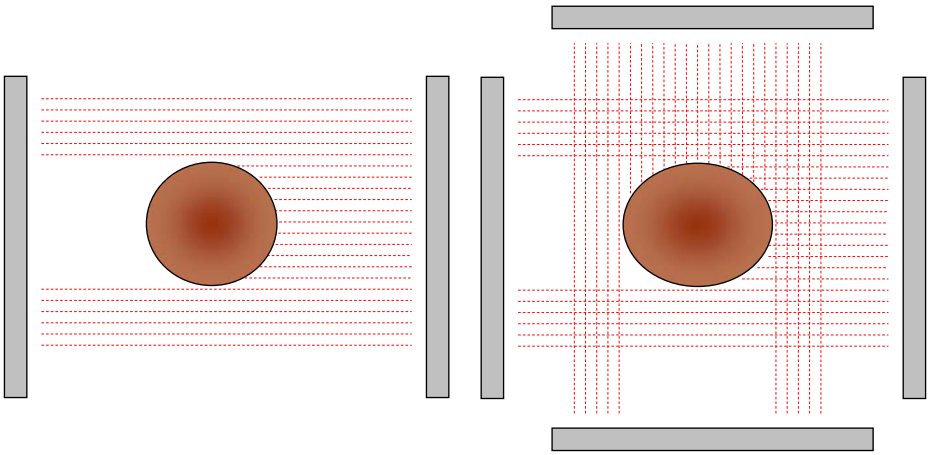
The system consists of a single board computer (MSH Module) and the appropriate sensors. It is designed for the non-contact measuring of logs.

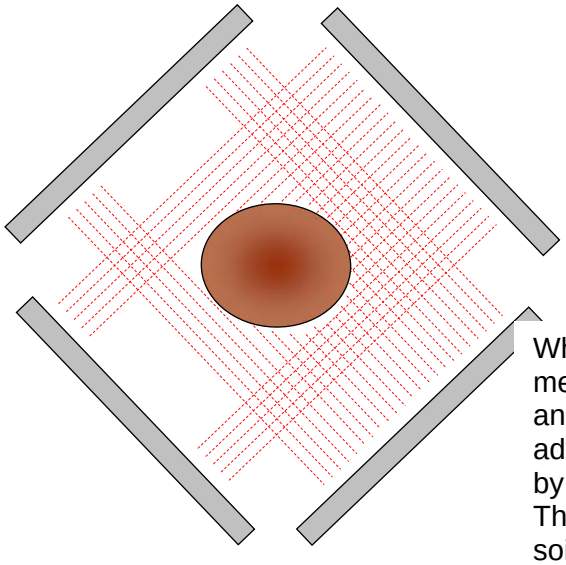
The logs are scanned in their complete length – up to 25 m (82 ft) – along one axis (usually vertically) or two axes (levels) for their diameters and their length. In case two measuring screens are in use these are placed at an angle of 90° and the outside diameters are measured accordingly.

The measuring results are available as "raw data" for customer specific evaluations, e.g. as basis for optimization software, or pre-evaluated for output of an official printer protocol. How the raw data is evaluated is described in the chapter "Evaluation of measuring data".

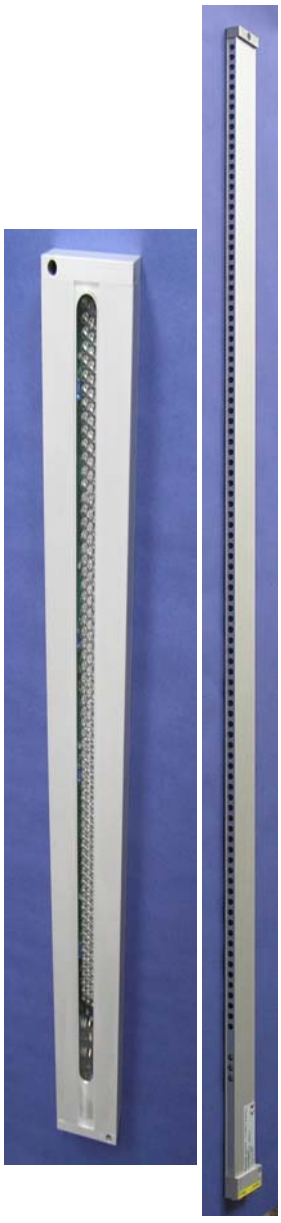
1. Setup of measuring system

The system is comprised of 1 or 2 **InfraScan**® Light Curtains (scanners) for diameter sensing and an encoder for length measuring.





When it is not necessary to measure exactly *vertically* and *horizontally*, it can be an advantage to turn the system by 45°.
There is less chance of lens soiling on lower units.

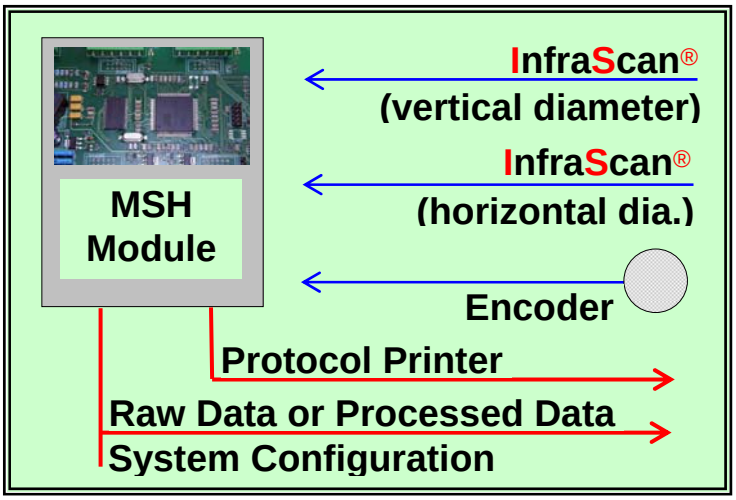


The interfaces are specially adapted for **InfraScan**®5000/02.5 scanners with a resolution of 1,25 mm (in the so-called Double Scan Mode) if the system is designated to be certified by the Office of Standards and Weights. In this case the use of 2 scanners for x-y-measuring is compulsory.

Depending on the application (and the size of the logs) the length of the scanners can vary, also the resolution of the scanners, e.g. **InfraScan**®5000 with 5 mm resolution (2.5 mm in Double Scan Mode) or **InfraScan**®4000 (10 mm in the Parallel Scanning Mode and 5 mm in the Double Scan Mode) can be used.

The software of the output interfaces allow for the adaptation to various controllers.[1]

The MSH (Computer) Module comprises the following Inputs and Data Outputs:



2. Data inputs

2.1 Measuring of diameter

The two scanners transmit the measured diameter values in number of interrupted beams as well as the POSITION values. This allows, if necessary, a three dimensional image of the log. Volume measurements require only diameter values.

2.2 Measuring of log length

The measurement of the log length is effected by means of an encoder, usually connected to the axle of the conveyor drive. The encoder output is combined with the corresponding diameter data. Encoder output in turn corresponds to a movement of the log (length factor). The total number of encoder pulses, during which a diameter is measured (only one scanner, e.g. the vertical one, is used for the length calculation) multiplied with the length factor, will indicate the log length.

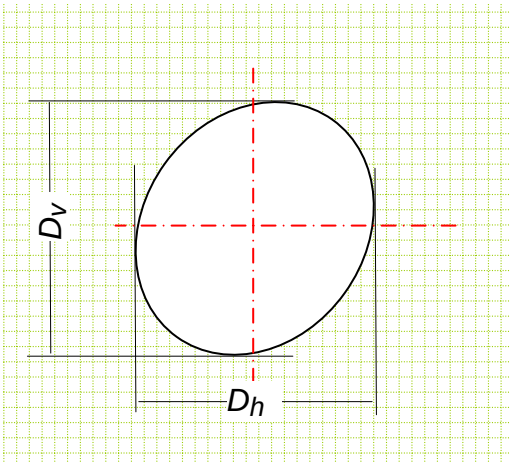
Length is measuring only during forward log motion. A reversal of conveyor direction will be detected by the system and the corresponding data will be deleted.

[1] For detailed information on the scanners please consult the INFRASCAN®5000 manual.

3. DATA Output Modes

3.1 Output of Raw Data

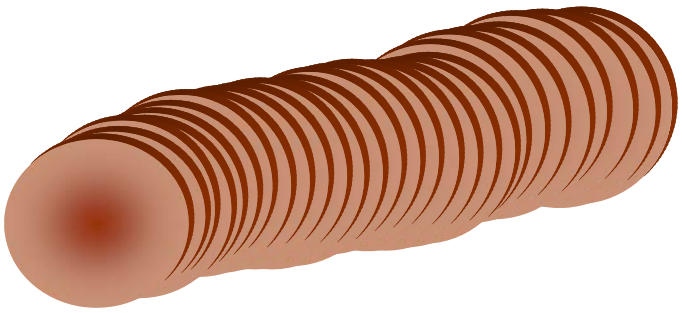
As mentioned before, for each encoder increment the information DATA (corresponding to diameter) and POSITION is available and can be output at the RS422 interface.



D_v = Diameter, vertical

D_h = Diameter, horizontal

This can be used to produce a 3 dimensional image of the log and to run special customer specific sorting programs or optimization programs which, however, are not part of the MSH software.



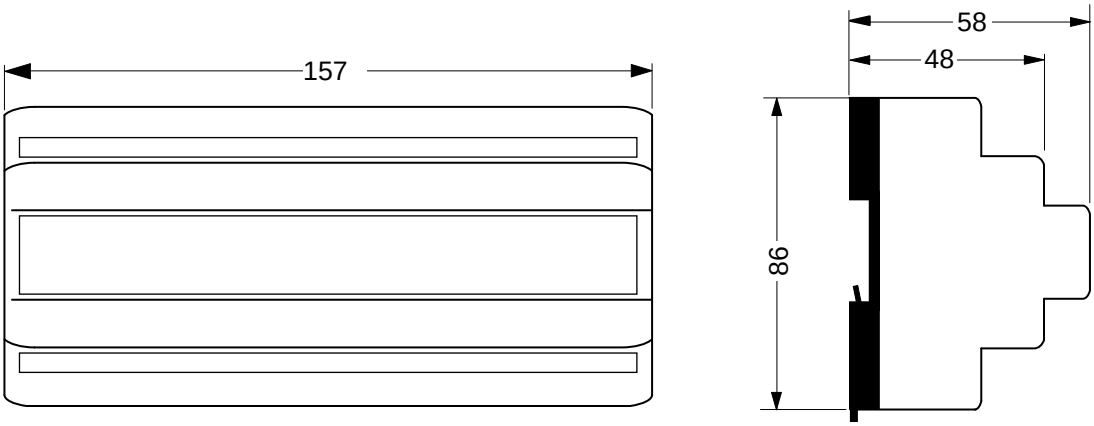
Example:
The raw data can be used to produce a 3-dimensional image of the log.

4. Technical Data Module

Mechanical Data

Casing

Dimensions (LxWxH):	157 x 86 x 58 mm
Casing material:	Lexan, Noryl UL94-V10
Cable connection:	PCB quick connectors
Mounting:	Clip-on to M36 DIN mounting rails
Protection:	IP20



Electrical Data

Power supply:	24VDC ±20%, ca. 60 mA (without load)
Interfaces:	2 x RS422 (**InfraScan**®) 2 x RS232 (1 used for protocol printer) Data exchange between Module and PC in printable ASCII signs to allow immediate communication with the terminal.
Inputs:	1 encoder, 2-channel, 24 V HI level 15.0 V...U_{supply} LO level < 1,1 V Driving current typically 5 mA at U = 23 V Encoder output: push-pull max. 40 mA
Outputs:	3 x Switching output 24 V, 100 mA, short circuit proof
Ambient temperature (Module):	+10°C ... +55°C

For technical data of scanners please see manuals of the appropriate **InfraScan**® type.

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SITRONIC GmbH
Weissenwolffstr. 14
4221 Steyregg-Linz
AUSTRIA / EUROPE
Tel +43 732 640591
Fax +43 732 640592
eMail office@sitronic.at
www.sitronic.at