GHD 3
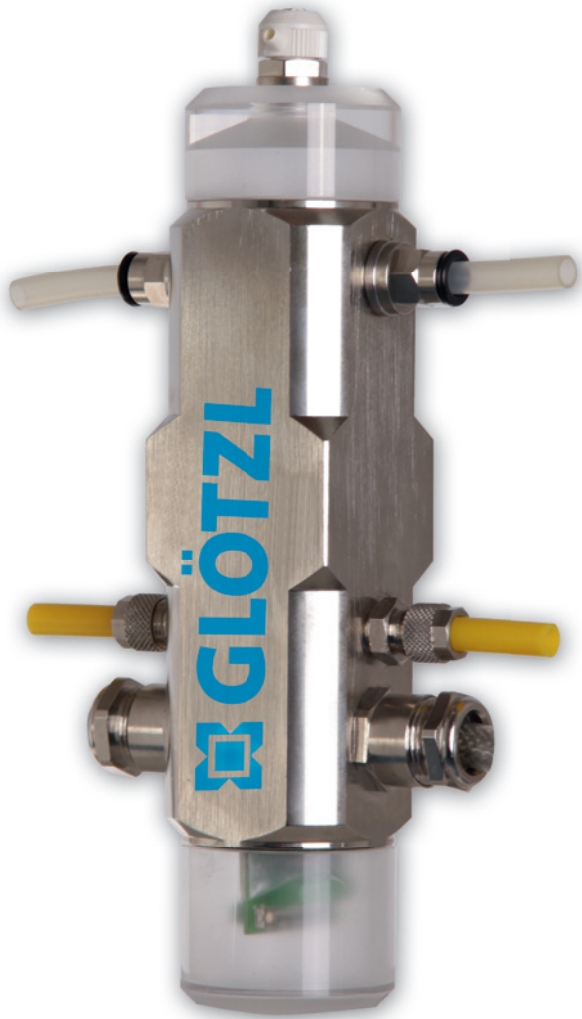
Electronic Precision Hose Levelling / Liquid Levelling System

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The GHD 3 liquid levelling system is pressurised through the gravitational load of a filling medium in a reference container and is connected via hoses to individual pressure sensors arranged in series. The measurement value displayed is equivalent to the height difference of an individual system measurement point referenced to the open surface area of the reference measurement point or that in the compensating vessel. In case of the electronic GHD 3 liquid levelling system, the hydrostatic gravitational pressure is determined as a differential value compared with the reference measurement point, and changes in the absolute fluid level at the reference measurement point are compensated for arithmetically. Air pressure compensation with the system is achieved via a central point. Movements can be determined within the alarm limits for signalling units. This requires height-stable positioning of the reference station outside of the area under observation with geodetic monitoring/ connection to extensometers. Local accumulations of air bubbles can be removed from the system via a vent screw on the head of the inspection glass. These can also be removed to a central rinsing station via an additional flexible line.

Technical data	GHD-D (digital)	GHD-A (analog)
Dimension sensor housing (BxHxT)	50 x 230 x 50 mm	50 x 170 x 50 mm
Weight:	1.7 kg	1.5 kg
Power supply:	18 up to 36 V DC	15 up to 30 V DC
Power consumption:	max. 35 mA	max. 20 mA
Output signal:	Digital (16 Bit A/D converter) RS485 galvanically isolated	Analog: 4 - 20 mA
Data acquisition:	MCC, MFM, MDL41 o. PC logging with GLA	Freely selectable or MFM, MDL41
Resolution:	0.015 mm	0.015 mm
Linearity:	< 0.1 % f. s. (typical)	< 0.2 % f. s.
Long-term drift:	0.1 %/year	0.1 %/year
Temperature range	-20° up to +80 °C	-20° up to +80 °C
Measuring range:	200, 400, 900 mm	200, 400, 900 mm
Measurement cable:	5 x 0,5 mm² + shield	3 x 0,5 mm²
Temperature drift:	Compensated	Compensation through evaluation

Benefits

- Central, continuous flushing at the reference point for bleeding air from the system
- Inspection window for bleeding air
- Blue LED operating indicator
- Secure and fast transmission of the simultaneously recorded data through delays of fractions of milliseconds made possible by our Glötzl bus technology
- Robust design of the case, suitable for use on construction sites
- Interfaces and components in a fully enclosed system
- Measurement ranges of 200 to 1000mmWs with high accuracy
- Analogue attenuation, can be pre-set at values between 100 and 1Hz where there are permanent or temporary vibrations in the surrounding area
- The digital version provides an additional freely selectable „floating average" of up to 40 measurements per second, retrospectively
- Recalibration is not necessary nor must compensation calculations be applied to the results, because the specific sensor parameters are processed within the controller itself
- The measurement value is displayed directly in mm
- Almost simultaneous recording of the values from all sensors in a system is possible, which makes the online display of the building's movements possible

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Reference station

Individual sensors are connected to a reference station.

The optimum solution would be to use a reference vessel with a compensating pump which would ensure that the fluid remains at a constant level, thereby allowing absolute values from the individual sensors to be used. Movements can therefore be observed within alarm limits for different detector units. For the associated recording and evaluation station we recommend our digital MCC LT measurement and evaluation station. This facilitates complex calculations and fault analysis of the system, including all necessary compensations and alarms. In order to optimise the temperature compensation, additional DTF-type temperature sensors can be used. These are able to detect the temperature of the fluid at a certain point in the measurement line and feed this back to the controller chain.