۱ - سنسورهای خط تولید شکر

pH/ORP transmitter
Liquisys CPM253

Compact field device for all industries

More information and current pricing:
www.endress.com/CPM253

Benefits:

- More operational safety: Continuous process check system, customized alarm configuration, proven Memosens interface for reliable sensor connection.
- Reliable self-monitoring: Sensor check system for pH glass and reference, calibration plausibility check.
- Easy to operate and service: Intuitive user interface, hot plug & play with pre-calibrated Memosens sensors, direct access for manual contact control.
- Reduced maintenance: Automatic cleaning function (with Chemoclean) triggered by alarm or limit switch.
- Fit for every application: Numerous extensions, such as P(ID) controller, timer, etc., allow for flexible adaption to all processes.

Specs at a glance

- **Input** One-channel-transmitter
- **Output / communication** 0/4-20 mA, Hart, Profibus
- **Ingres protection** No

Field of application: Liquisys CPM253 is a standard pH/ORP transmitter for all analog and digital Memosens sensors. It improves your operational safety thanks to continuous plausibility, process and sensor checks. Select from numerous hardware and software modules, such as relays or fieldbus communication, to adapt it exactly to your measuring task. This modularity also allows you to upgrade the transmitter at any time. A simple menu and two-point calibration make configuration and operation fast and easy.

Features and specifications

pH

Measuring principle
Potentiometric

Application
Water, waste water, process

Characteristic
4-wire transmitter

Design
pH/ORP field housing made of PC/ ABS

Material
PC/ABS housing

Dimension
247x170x115mm (9.63x6.63x4.48inch)

Temperature sensor
Display and current output

Ex certification
No

Ingres protection
No

Input
One-channel-transmitter

Output / communication
0/4-20 mA, Hart, Profibus

Additional certifications
CSA Gen. purpose

ORP / Redox

Measuring principle
Sensor ORP / Redox

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More information www.endress.com/CPM253

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Endress+Hauser

۲ - لودسل

sartorius

PR 6221

Weighbridge Load Cell

20t... 75t, Typ C3/C4/C5/C6

- No corner adjustment necessary
- High overload capacity
- IP 68 (1.5 m/10.000 hrs)
  IP 69K (washdown cleaning)
- Proven rocker-pin principle
- Best overvoltage protection
- Highest reliability
- 100 % Maintenance free
- Ex - version available
- Patent pending:
  WO 01/18504, EP 1 227 306 A1

Product Profile

The PR 6221 range of load cells is designed exclusively for use on road weighbridges.
The unique design principle, combined with the installation kits, counterbalances movements caused by mechanical or thermal expansion or contraction of the weighbridge construction.
The unique combination of the selected geometry and material/surface hardness parameters guarantees perfect rolling characteristics, high restoring forces and long-term maintenance-free operation.
A particular design characteristic is that the height and shape of the load cell remain constant over various load stages, whilst there is a particularly high overload range of, in part, up to 200%.

At the same time, this range distinguishes itself – in addition to its high measurement accuracy and repeatability – above all for its unmatched reliability, robustness and stability, which enable trouble-free operation without adjustment, year after year.
The pendulum support principle, combined with patented measuring element geometry, ensures that force transmission into the sensor is always at the optimum level and, in this way, the effect on measurement accuracy is minimized. At the same time, the load cell offers a particularly high overload range.
The hermetically sealed enclosure and special TPE cable allow the unit to be used even under extreme operating conditions.

Special resistance strain gauge technology, in combination with the PR6021/.. cable junction boxes, provides for demonstrably improved lightning protection.
The entire measurement chain can be calibrated without the use of a reference weight. Due to "matched output" technology, in many cases electrical corner adjustment is not required. This saves a tremendous amount of time during commissioning.
An explosion-proof (Ex) version of this range of load cells is also available, as an option, for use in intrinsically safe environments.

Technical Data

Maximum capacity	highest limit of specified measuring range	E_{max}	20	30	50	60	75	t
Max. usable load	upper limit for measurements	E_u	40	60	75	75	75	t
Destructive load	danger of mechanical destruction	E_d	> 100	> 150	> 150	> 150	> 150	t
Rated output	relative output signal at nominal load for accuracy classes C4 at $E_{max} \geq 60t$, C5 at $E_{max} \geq 50t$	C_n	1 1.5	1 1.5	2 1,5	2.4	3	mV/V mV/V
Nominal deflection	max. elastic deformation under nominal load	s_{nom}	0.3	0.3	0.6	0.7	0,8	mm

Accuracy class			**C3**	**C4**	**C5**	**C6***	
Accuracy class			0.015	0.012	0.010	0.008	% E_{max}
Minimum dead load	lowest limit of specified measuring range	E_{min}	0	0	0	0	% E_{max}
Min. LC verification interval	minimum load cell verification interval ($v_{min} = E_{max}/Y$)	Y	14,000	20,000	20,000	20,000	
Deadload Return	factor for min. dead load output return (DR = 1/2 E_{max}/Z) for E_{max} 50t:	Z Z	6,000	8,000 6,000	8,000 6,000	8,000	
Tolerance on rated output	permissible deviation from rated output	d_c	< 0.07	< 0.07	< 0.07	< 0.07	% C_n
Zero output signal	load cell output signal under unloaded condition	S_{min}	< 1.0	< 1.0	< 1.0	< 1.0	% C_n
Repeatability error	max. change in load cell output for repeated loading	ε_R	< 0.005	< 0.005	< 0.005	< 0.005	% C_n
Creep, during 30 min	max. change in load cell output under nominal load	d_{cr}	< 0.015	< 0.0125	< 0.010	< 0.008	% C_n
Non-linearity	max. deviation from best straight line through zero	d_{lin}	< 0.01	< 0.01	< 0.01	< 0.01	% C_n
Hysteresis	max. diff. in LC output between loading and unloading	d_{hy}	<0.0165	< 0.0125	< 0.010	< 0.008	% C_n
Temperature effect on S_{min}	max. change of S_{min} /10K DT over B_T referred to C_n	TK_{Smin}	< 0.01	< 0.007	< 0.007	< 0.007	% C_n/10K
Temperature effect on C_n	max. change of C_n /10K DT over B_T referred to C_n	TK_C	< 0.01	< 0.008	< 0.007	< 0.005	% C_n/10K
Input impedance	between supply terminals	R_{LC}	1,080 ± 10	1,080 ± 10	1,080 ± 10	1,080 ± 10	Ω
Output impedance	between measuring terminals for accuracy classes C5 at E_{max} = 50t C4, C5 at E_{max} = 60t C4, C5 at E_{max} = 75t	R_O	1,010 ± 1 760 ± 1 635 ± 1 510 ± 1	1,010 ± 1 760 ± 1 635 ± 1 510 ± 1	1,010 ± 1 760 ± 1 635 ± 1 510 ± 1	1,010 ± 1 760 ± 1 635 ± 1 510 ± 1	Ω Ω Ω Ω
Insulation impedance	between measuring circuit and housing at 100V_{DC}	R_{IS}	> 5,000	> 5,000	> 5,000	> 5,000	MΩ
Insulation voltage	between circuit and housing		500	500	500	500	V_{DC}
Recommended supply voltage	to hold the specified performance	B_u	4... 24	4... 24	4... 24	4... 24	V
Max. supply voltage	permissible for continuous operation without damage	U_{max}	32	32	32	32	V
Nominal ambient temp. range	to hold the specified performance	B_T	-10... +55	-10... +55	-10... +55	-10... +55	°C
Usable ambient temp. range	permissible for continuous operation without damage	B_{Tu}	-40... +95	-40... +95	-40... +95	-40... +95	°C
Storage temperature range	transportation and storage	B_{TL}	-40... +95	-40... +95	-40... +95	-40... +95	°C
Permissible eccentricity	permissible displacement from nominal load line	S_{ex}	10	10	10	10	mm
Vibration resistance	resistance against oscillation (IEC68-2-6 Fc)		20g, 100h, 10... 150Hz	20g, 100h, 10... 150Hz	20g, 100h, 10... 150Hz	20g, 100h, 10... 150Hz	
Air pressure effect	influence of ambient air pressure on S_{min}	PK_{Smin}	< 500	< 500	< 500	< 500	g/kPa

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INDICATOR

SI4010/4010R

Digital Weighing Indicator

FEATURE

- Industrial Scale / Simple Volume Packer Application
- External Input : 4 pcs of input terminal built in
- SI 4010 : No control relay output
- SI 4010R : 3pcs control relay built in (HIGH, LOW, Empty)
- Communication : Serial interface 2pcs (1pcs is standard)
- Free Fall(In-Flight) function added (Free Fall For High Set value)
- only for SI4010R Model
- Hold Function (Sample / Peak Hold)
- Large Display (1.0 inch)-Large View Of Weight Value

DIGITAL SPECIFICATION

Display	Section	Specification
Main Display	Weight Display	7segment / 6 digit Red FND Display 25.4(H)x14.8(W)mm
	Digit(Division)	x1,x2,x5,x10,x20,x50
	Max. Display	+999,950
	Under Zero	"-" symbol display
Status Display	2ø Green/ Red LED	Steady, Zero, Tare, kg,g,t
Key pad	Number & Function keys : 13pcs Calibration Lock key : 1pcs	

SERIAL COMMUNICATION MODE

Serial Interface - RS232 / 422 / 485			
Commport	Command Mode	Data Transference	Print
Standard RS232C	●	●	●
Optional	●	●	X

EXTERNAL INPUT MODE - "F-FUNCTION 11"

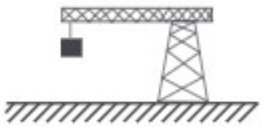
Ex.1	Ex.2	Ex.3	Ex.4
ZERO	TARE	TARE RESET	PRINT
ZERO	TARE/ RESET	HOLD	HOLD RESET
ZERO	TARE/ RESET	PRINT	SUB TOTAL PRINT
ZERO	PRINT	HOLD	HOLD RESET

SYSTEM APPLICATION

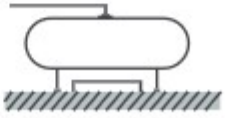
Auto Packer

Animal Scale

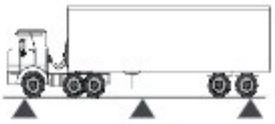
Tester



Crane Scale



Tank Scale



Truck Scale

CONTROL RELAY OUTPUT MODE FOR SI 4010R

Weighing Mode (F-Function 21)			
Mode	Output 1	Output 2	Output 3
Limit 1 ("A" Dry Contact)	LOW	HIGH	EMPTY
Limit 2 ("B" Dry Contact)	LOW	HIGH	EMPTY

Electrical
Temperature
Measurement

TR10 Industrial RTD Assembly

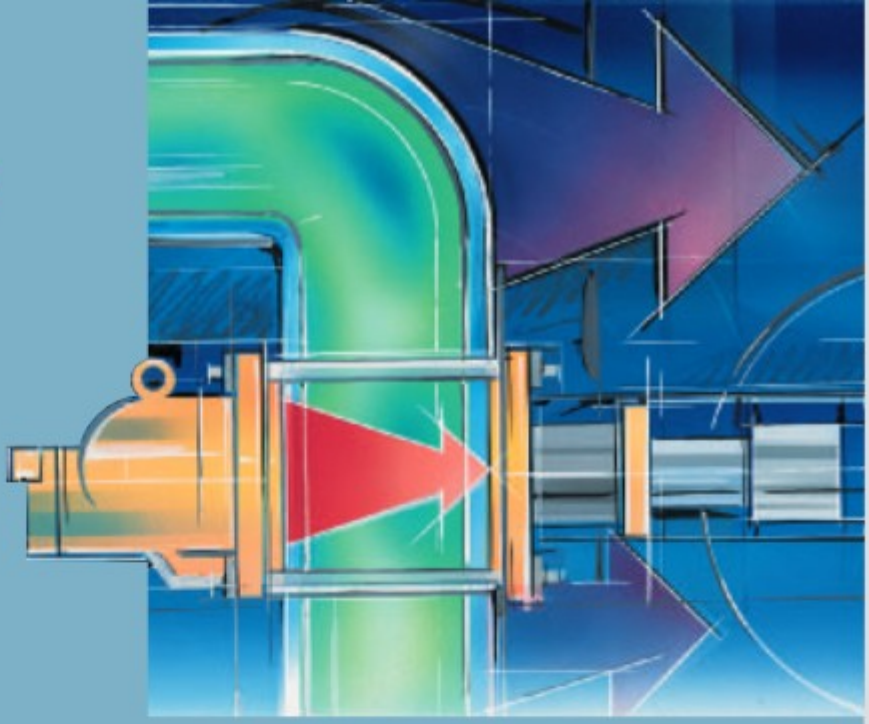
WIKA
Part of your business

TR10 - Industrial RTD Assembly	
Sensor Element:	Pt100, Pt1000, Pt10, Cu10, or Ni120
Measuring range:	-200 °C to +1000 °C (depending upon element)
Wiring configuration:	2, 3, and 4 wire (single or dual)
Classification tolerance:	■ Class B to DIN EN 60751 ■ Class A to DIN EN 60751 ■ 1/3 of DIN Class B ■ 1/10 of DIN Class B ■ Less than class B
Electrical approvals:	CSA, FM, ATEX/IEC, NAMUR
Options:	■ Lengths and diameters standard or customer specific ■ Transmitter mounted directly within connection head or on measuring insert DIN plate ■ Calibration - single point, multiple points, and to Callendar-Van Dusen coefficients ■ Material traceability of the conductors, metal sheath and mineral insulation ■ Selectable accuracy tolerance ■ Exchangeable measuring insert ■ Special designs and materials ■ Explosion protection: CSA, FM, ATEX (EEx-d) ■ Intrinsically safe version: ATEX (EEx-i) ■ Non-sparking version: ATEX (EEx-n) ■ RTD transmitter matching

Features:

- The sensor can be mounted into a thermowell or directly into a process with the use of a fixed, spring loaded or compression process fitting.
- The assembly can be supplied with or without a transmitter. Transmitters convert the resistance signal from the RTD to a linear analogue or digital output (commonly 4-20 mA). This signal reduces potential inaccuracies by negating the need for compensating output lead wires.
- The assembly has electrical approvals for explosion proof hazardous locations, intrinsic safety, ingress protection and general purpose areas.
- Electrical authorities that have registered these approvals include CSA, FM, ATEX/IEC and NAMUR. The approvals can be with or without an attached thermowell. A specially designed and patented integral flame path fitting makes it possible when supplied without a thermowell.
- The RTD sensors available for this assembly consist of a variety of sheath materials including stainless steels, corrosion resistant and high temperature oxidation resistant alloys. For temperatures greater than 600°C it is advisable to utilize an Inconel 600 sheath in place of stainless steel.
- RTD diameters range from 0.125 inch to 0.250 inch and 2 mm to 8 mm. Standard diameters are 0.125 inch & 0.250 inch and 3 mm & 6 mm.
- The RTD sensor can be spring-loaded ensuring a positive contact to the base of a thermowell bore.
- RTD temperature ranges are dependent on the RTD element, sheath material, element accuracy and the tip construction:
  - ☐ General purpose, the temperature range is -200°C to 1000°C
  - ☐ Fast response copper tip, the temperature range is -200°C to 250°C
  - ☐ Tip sensitive thin film, the temperature range is -50°C to 1000°C
  - ☐ Fast response/tip sensitive copper tip including the vibration proof construction, the temperature range is -50°C to 250°C
- A variety of neck extensions are possible. They provide a fixture from the enclosure (connection head) to the process or thermowell. The standard neck extensions are the nipple-union-nipple or the male threaded neck tube. These extensions allow for directional rotation of the head for field wiring as well as a positive quick disconnection of the assembly from the process or thermowell.

۵ - ابزار سنجش



Determination of density and concentration

LB 444

PROCESS CONTROL

BERTHOLD TECHNOLOGIES

Technical Data LB 444

Evaluation unit LB 444

Design	19" module 3 HE, 21 TE, protection class IP 20
Weight	approx. 2 kg
Power supply	230/115 V AC +/– 10 %, 18 to 32 V DC
Power consumption	approx. 30 VA (AC), 30 W (DC)
Operation temperature:	0 to + 50 °C (273 to 323 K) no condensation
Storage temperature	- 40 to + 70 °C (233 to 343 K) no condensation
Mounting	in a panel in a 19" rack 21 HE, 84 TE (max. 4 units) wall mounted cabinet (IP 65/NEMA 4) (max. 2 units)
Detector connection	[EEx ib] IIB [EEx ib] IIC (option)
Temperature signal	Pt 100 connected at the detector [EEx ib IICT6] measuring range: - 20 to + 200°C (253 to 473 K) or input for temperature signal 0/4 to 20 mA, isolated, impedance 50 Ω
Digital inputs	DI1/DI2: for external selection of a calibration curve DI3: for external start/stop of measurement
Outputs	0/4 to 20 mA isolated, max. 500 Ω Digital outputs: 1 relay for collective failure message 2 relays for thresholds max load: AC: max. 250 V AC, max. 1 A, max. 200 VA DC: max. 300 V; max. 1 A, max. 60 W not inductive
Display	LCD-display with 4 x 20 characters, illuminated, data input via membrane keys, user guided dialog with "soft keys", dialog: German, English, French, Spanish, data protection by user-selectable password.
Interfaces	RS 232 and RS 485
Program	Time constant 0.5 to 9999 s with automatic reduction of 1/10 of the value in case of rapid changes of measuring value. Automatic decay compensation for ^{137}Cs, ^{60}Co, ^{241}Am, ^{244}Cm, ^{90}Sr and ^{85}Kr.

Design modifications may occur without notice.

Detectors

Detectors	Scintillation counter, stainless steel housing, IP 65/NEMA 4 Connection for RTD Pt 100	
Cable glands	M16	M12
Cable diameter	5 to 10 mm	4 to 7 mm
Connection cable	LiYCY 2 x 1 mm²	
Max. cable length	with cable Id Nr. 32024	
	EEx ib IIB	EEx ib IIC
	1000 m	250 m

Protection class

ATEX	Ⓔx II 2 G EEx de IIC T6 or Ⓔx II 2 G EEx ib d IIC T6
Options: ATEX	Ⓔx II 2 D IP65 T 80 °C
FM	Class I Division 1 Group A, B, C, D Class II Division 1 Group E, F, G Temperature class: T6 (85 °C)

Detectors with NaI (Tl) Crystal

Type	Crystal size	approval	weight approx. kg
LB 4441-01	25/25	ATEX	18
LB 4441-02	40/35	ATEX	18
LB 4441-03	50/50	ATEX	18
LB 4451	44/5	ATEX	6
LB 5441-01	25/25		18
LB 5441-02	40/35		18
LB 5441-03	50/50		18
LB 5481	44/5		6

Long term stability: +/–0,1 %

Operation temperature: - 40 to + 50 °C, (233 to 323 K)
For higher op. temp. a water cooling can be supplied.

Storage temperature: - 40 to + 70 °C, (243 to 343 K)

Detectors with plastic scintillators

Type	Approval	Weight ca. kg
LB 4430	ATEX/FM	54
LB 5430		52

Operation temperature: - 40 to + 50 °C, (233 to 323 K)

Storage temperature: - 40 to + 55 °C, (243 to 328 K)

Source and shielding see separate brochure.

BERTHOLD TECHNOLOGIES

ISO 9001 BERTHOLD Quality you can trust

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