

The "H2Sense Hydrogen Sensor Database"

No. M	No. S	Manufacturer City, Country	Sensor Model	Technology	Description / Remark	Application	Detection Range (H ₂)	Certificates / Approvals / Tests / Classification
1	1	ABB Limited Process Automation Stonehouse, UK	AK 100 Series	Thermal conductivity Katharometer	H ₂ Purity & Purge Gas Monitor; ATEX compliant gas analyzer system	Hydrogen purity and purge gas measurement in hydrogen-cooled turbo-generators and alternators	Hydrogen purity analysis: 85 to 100 % H ₂ 80 to 100 % H ₂ user selectable Purge gas analysis: 0 to 100 % hydrogen in purge gas 0 to 100 % air in purge gas	ATEX II (1)G CENELEC Eex ia IIC T4
	2		EL3000 Series	Thermal conductivity	Continuous Gas Analyzer System; uses ABB gas analyzer Caldos27 for hydrogen measurements	Continuous gas analysis, measurement of H ₂ in air and various gases and also various gases in H ₂	Smallest Measurement Ranges: 0 - 11 vol% H ₂ in air, Ar, CH ₄ , CO CO ₂ , N ₂ 0 - 10 vol.% H ₂ in NH ₃ 0 - 13 vol.% air, Ar, CO, CO ₂ , N ₂ in H ₂ 0 - 14 vol% CH ₄ in H ₂ 0-10 vol% NH ₃ in H ₂	EN 61010-1:2001 (=> Low Voltage Directive 2006/95/EC) EN 61326-1:2006, EN 61000-3-2:2006, EN 61000-3-3:1995 + A1:2001 + A2:2005 (=> EMC Directive 2004/108/EC) EN 60079-15:2005 (=> ATEX Directive 94/9/EC) CAN/CSA-C22.2 No. 61010-1-04 UL 61010-1 (2 nd ed.) & further certifications for Russia and China
	3		EL3060 Series	Thermal conductivity	Continuous Gas Analyzer System; uses ABB gas analyzer Caldos27 for hydrogen measurements	Continuous gas analysis, measurement of H ₂ in air and various gases and also various gases in H ₂ ; Special version for monitoring hydrogen-cooled turbo generators	Smallest Measurement Ranges: 0 - 1 vol% H ₂ in air, Ar, CH ₄ , CO CO ₂ , N ₂ 0 - 10 vol% H ₂ in NH ₃ 0 - 3 vol% air, Ar, CH ₄ , CO, CO ₂ , N ₂ in H ₂ 0 - 14 vol% CH ₄ in H ₂ 0-10 vol% NH ₃ in H ₂ Special Version: 100 - 0 vol% H ₂ in CO ₂ 100 - 80/90 vol% H ₂ in air	EN 61010-1:2001 (Low Voltage Directive 2006/95/EC) EN 61326-1:2006, EN 61000-3-2:2006, EN 61000-3-3:1995 + A1:2001 + A2:2005 (EMC Directive 2004/108/EC) EN 60079-0, EN 60079-1, EN 60079-7 (ATEX Directive 94/9/EC)
2	4	AirTest Technologies Corp. Delta, Canada	TR5200 CG	Catalytic	Gas sensor/transmitter for all combustible gases, target gas to be specified	Battery charging rooms, vehicle maintenance facilities, hydrogen gas fueling facilities, below ground facilities, etc.	Standard Range: 0 - 100 % LEL Combustible Gas Minimum Detectable: 2% LEL	CSA/NRTL
	5		TR5500 CG	Catalytic	Gas sensor/transmitter for all combustible gases, target gas to be specified; explosion-proof enclosure	Battery charging rooms, vehicle maintenance facilities, hydrogen gas fueling facilities, below ground facilities, etc.	Standard Range: 0 - 100 % LEL Combustible Gas Minimum Detectable: 2% LEL	CSA/UL Cl. 1, Div. 1

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3	6	Alphasense Ltd. Great Notley, UK	H2 AF	Electrochemical	Hydrogen-specific sensor element; Part of toxic/exotic gas sensors portfolio; "very low sensitivity to CO makes this one of the most selective hydrogen sensors on the market"	Emissions monitoring, process safety, environmental monitoring, volatile organic compounds (VOCs)	Limit of performance warranty: 2000 ppm	n/a
	7		CH-A3	Catalytic Pellistor	Flammable gas sensor, not hydrogen-specific; small size (Model A)	fixed or portable application	0 - 100 % LEL methane	Sira 07ATEX 1088X II 2 G Ex d IIC T4 IECEx SIR07.0031X Ex d IIC T4 UL913 091007-E253708 Cl. I, II, III, Div. 1 CSA 22.2 1906313 Cl. 4828 31
	8		CH-D3	Catalytic Pellistor	Flammable gas sensor, not hydrogen-specific; miniature size (Model D)	portable application	0 - 100 % LEL methane	Sira 07ATEX 1088X II 2 G Ex d IIC T4 IECEx SIR07.0031X Ex d IIC T4 UL913 091007-E253708 Cl. I, II, III, Div. 1 CSA 22.2 1906313 Cl. 4828 31
4	9	Analox Stokesley, UK	3003 SI	Electrochemical Galvanic Fuel Cell	Gas sensor transmitter, modular design; Hydrogen Gas Monitoring at ppm level, models for 0-1000 ppm, 0-2000 ppm	Industrial Safety	0 - 1000 ppm 0 - 2000 ppm	Ga Ex ia IIC T4 ATEX II1G
5	10	Applied Nanotech Inc. Austin, TX, USA	MNPS-B	Other/New Nanotechnology / Resistive	Hydrogen sensor; effective surface area of Pd-nanoparticles increase on reaction with hydrogen, Phase transition of Pd-based nanoparticles resulting in decrease in sensor resistivity	Fuel cells, hydrogen storage, automotive, back-up power systems, portable gas detectors and monitors, power transformers	0 - 10000 ppm Lowest detection limit: 10 ppm	n/a
6	11	AppliedSensor GmbH Reutlingen, Germany	HLS-440	Combination of Work function Field effect transistor & Thermal conductivity	Hydrogen Leak Sensor; catalytic metal gate stack as gas-sensing layer, thermal conductivity sensor element improves sensor performance and increases measuring range	Hydrogen gas leak detection in hydrogen-powered vehicles (sensor locations at cabin ceiling, under the hood of the engine compartment, beneath the trunk lid); leak detection at hydrogen fueling stations	0 - 4.4 % H ₂ in air	EMC: Automotive Shock: Automotive Vibration: Automotive ATEX: Zone 2 Self test/Error handling: Developed in accordance to IEC 61508 (SIL2)
	12		HLS-440P	Thermal conductivity	Hydrogen Leak Sensor for installation in harsh environments; catalytic metal gate stack as gas-sensing layer, thermal conductivity sensor element improves sensor performance and increases measuring range	Hydrogen gas leak detection in fuel cell systems (e.g. exhausts) and other in-process application	0 - 10 % H ₂ in air or N ₂	EMC: Automotive Shock: Automotive Vibration: Automotive Designed for ATEX 100a Zone 2 Self test/Error handling: Developed in accordance to IEC 61508 (SIL2)
	13		HPS-100	Thermal conductivity	Hydrogen Process Sensor for installation in harsh environments; catalytic metal gate stack as gas-sensing layer, thermal conductivity sensor element improves sensor performance and increases measuring range	Hydrogen gas measurement in fuel cell systems (e.g. exhausts) and other in-process application	0 - 100 % H ₂ in N ₂	EMC: Automotive Shock: Automotive Vibration: Automotive Designed for ATEX 100a Zone 2 Self test/Error handling: Developed in accordance to IEC 61508 (SIL2)
7	14	Arrgh!! Manufacturing Co. Inc. Novato, CA, USA	H2 - Hydrogen Gas Detector	Resistive Semiconductor	Wall-mount Hydrogen Detector	Lead-acid battery charging rooms and other areas	n/a	n/a

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8	15	Asensor Technologies Co. Ltd. Shenzhen, China	DH4-H2-500	Electrochemical	Three-electrode hydrogen sensor element, 0-500 ppm	Hydrogen gas detection and monitoring for Industrial Safety, Mining, Residential Safety, Emissions, Environmental Monitoring	0 - 500 ppm	n/a
	16		DH4-H2-1000	Electrochemical	Three-electrode hydrogen sensor element, 0-1000 ppm	Hydrogen gas detection and monitoring for Industrial Safety, Mining, Residential Safety, Emissions, Environmental Monitoring	0 - 1000 ppm	n/a
	17		DH4-H2-10000	Electrochemical	Three-electrode hydrogen sensor element, 0-10000 ppm	Hydrogen gas detection and monitoring for Industrial Safety, Mining, Residential Safety, Emissions, Environmental Monitoring	0 - 10000 ppm	n/a
	18		DH7-H2-500	Electrochemical Amperometric	Three-electrode hydrogen sensor element, 0-500 ppm	Hydrogen gas detection and monitoring for Industrial Safety, Mining, Residential Safety, Emissions, Environmental Monitoring	0 - 500 ppm	n/a
	19		DH7-H2-1000	Electrochemical Amperometric	Three-electrode hydrogen sensor element, 0-1000 ppm	Hydrogen gas detection and monitoring for Industrial Safety, Mining, Residential Safety, Emissions, Environmental Monitoring	0 - 1000 ppm	n/a
	20		DH7-H2-10000	Electrochemical Amperometric	Three-electrode hydrogen sensor element, 0-10000 ppm	Hydrogen gas detection and monitoring for Industrial Safety, Mining, Residential Safety, Emissions, Environmental Monitoring	0 - 10000 ppm	n/a
	21		KG100A	Electrochemical	Fuel cell sensor, composite readings of H ₂ , CO, C ₂ H ₂ , C ₂ H ₄	Monitoring of the concentration of a specific gas in a target environment Application fields: energy, electric power, petrochemical, nuclear power, etc.	0 - 5000 µL/L	n/a
	22		KG100B	Electrochemical	Fuel cell sensor, selective H ₂	Monitoring of the concentration of a specific gas in a target environment Application fields: energy, electric power, petrochemical, nuclear power, etc.	0 - 5000 µL/L	n/a
	23		KG2100A	Electrochemical	Fuel cell sensor, composite readings of H ₂ , CO, C ₂ H ₂ , C ₂ H ₄	Determination of gases in different fields, e.g. electric power, nuclear power, etc.	0 - 5000 µL/L	n/a
	24		KG2100B	Electrochemical	Fuel cell sensor, selective H ₂	Determination of gases in different fields, e.g. electric power, nuclear power, etc.	0 - 5000 µL/L	n/a
9	25	AST American Sensor Technologies Inc. Mount Olive, NJ, USA	AST 2000 H2	Mechanical Piezoresistive	Hydrogen pressure sensor / transducer applying Krystal Bond™ Technology (MEMS pressure sensor technology using MEMS strain gages on the surface of a single piece metal diaphragm)	PEM fuel cells, hydrogen storage, hydrogen filling stations, back-up power, test stands, e.g. control of hydrogen flow to fuel cell stack	Available Pressure Ranges: 20 bar, 448 bar, 500 bar, 700 bar, 900 bar	EC 79 (20 bar, 350 bar, 700 bar) CE EN 61326 EU 406/2010 Annex IV Part 3 Sects. 2, 3, 4.1.1, 4.1.2, 4.2.1, 4.2.2, 4.2.3, 4.2.5 ECE R110 Rev.1
	26		AST 4000	Mechanical Piezoresistive	Pressure sensor / transducer adaptable to hydrogen sensing applying Krystal Bond™ Technology ; AST 4000 for flexibility in mechanical and electrical interfaces	PEM Fuel Cells, Hydrogen Filling Stations, Back Up Power, Hydrogen Storage, etc. used, for instance, at outlet valve of fuel storage vessels	All pressures between 0 - 25 PSI and 0 - 10000 PSI	UL/cUL 508
	27		AST 4300	Mechanical Piezoresistive	Pressure transducer adaptable to hydrogen sensing applying Krystal Bond™ Technology; AST 4300 for high accuracy, approved for use in hazardous location areas	Hydrogen fuel, gas compression and storage	All pressures between 0 - 25 PSI and 0 - 10000 PSI	UL/cUL Class 1, Div. 2, Groups A, B, C, D EN 60068-2-27 (Shock) EN 60068-2-6, 60068 -2-64, IEC 68-2-32 (Vibration)

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	28		AST 4600	Mechanical Piezoresistive	Pressure sensor / transducer adaptable to hydrogen sensing applying Krystal Bond™ Technology; AST 4600 explosion proof, to withstand high vibration and temperature extremes	Industrial OEM & Hydrogen Equipment	0 - 100, 200, 500, 1000, 1500, 2500, 3000, 5000, 7500, 10000, 15000, 20000 PSI	CSA 30 (UL 1203/FM3615) Class 1, Zone 1, Group IIC; CSA 30 Class 1, Div. 1, Groups A, B, C, D CSA 30 Class 2, Div. 1, Groups E, F, G EN 60068-2-27 (Shock) EN 60068-2-6, 60068 -2-64, IEC 68-2-32 (Vibration)
10	29	Bacharach Inc. New Kensington, PA, USA	Leakator® 10	(Solid state / Semiconductor; patented)	Combustible gas leak detector, hand-held, gases detected: hydrogen, etc.	Leak detection	20 ppm Sensitivity, methane-based	UL 913 Class 1, Div. 1, Groups A, B, C, D
11	30	BERNT Messtechnik Düsseldorf, Germany	GP2000HL	(Semiconductor) Electrochemical	Gas warning system for hydrogen gas; hydrogen-specific device based on devices for toxic and combustible gases; Different technologies for different measurement ranges	Monitoring of areas with restricted or no accessibility, gas withdrawal from machines and exhaust pipes	min. 0 - 100 ppm max. 0 - 2000 ppm	n/a
12	31	Bieler + Lang GmbH Achern, Germany	Exmonitor / Gasmonitor H2 1000	Electrochemical	Detects toxic gases, e.g. hydrogen, and oxygen, depending on specific sensor	Industrial safety equipment, monitoring of gas concentration and warning	0 - 1000 ppm (standard range; 0 - 2000 ppm available)	EC Directive 94/9/EC (ExMonitor): II 2 G Ex ia IIC T4 Gb BVS 03 ATEX E 384
	32		ExDetector HC-100	Catalytic	Detection of combustible gases and vapors; Certificate (BAM) for examined gases available	Industrial safety equipment, monitoring of gas concentration and warning	0 - 100 % LEL	EC Directive 94/9/EC Housing/Electronics: II 2 G Ex de [ib] IIC T6 / Ex de IIC T6 (PTB certified) Measuring head: II 2 G Ex e IIC T4 / T6 (PTB certified) BAM Performance Certification Instrument safety: EN 50270
	33		ExDetector HC-150	Catalytic	Detection of combustible gases and vapors; Certificate of conformity (PTB) available	Industrial safety equipment, monitoring of gas concentration and warning	0 - 100 % LEL	ATEX: II 3 G Ex nA de IIC T4 Certificate of conformity (PTB)
	34		ExDetector HC-200	Catalytic	Detection of combustible gases and vapors	Industrial safety equipment, monitoring of gas concentration and warning	0 - 100 % LEL	EC Directive 94/9/EC: II 3(2) G Ex nA de [ib] IIC T4 (PTB Certified) Ex-Zone 2 Use: EMC Directive 2004/108/EC ATEX Directive 2004/108/EC
	35		ExDetector SC-220	(Semiconductor)	Detection of combustible gases and vapors, Type P sensor for hydrogen detection	Industrial safety equipment, monitoring of gas concentration and warning	0 - 50 % LEL	ATEX: II 3(2) G Ex nA de [ib] IIC T4 (PTB Certified) Zone 2 Safety Standards: EN 50270, EN 61000-6-3, EN 60079-15

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13	36	Bionics Instrument Co. Tokyo, Japan	GS-1550DP GS-1551DP	Electrochemical	Explorer Series Gas Detector, hydrogen sensors for different ranges; Gas detection method: Diffusion	Continuous monitoring of target gas in hazardous areas	0 - 4000 ppm (Standard) 0 - 1000 ppm (Low)	ATEX II 2G EEx d [ia] IIC T6 EN 50014, EN 50018, EN 50020 CE, EN IEC 61000-6-2, EN IEC 61000-6-3
	37		GS-1550HT GS-1551HT	Electrochemical	Explorer Series Gas Detectors, hydrogen sensors for different ranges; Gas detection method: Suction	Continuous monitoring of target gas in hazardous areas	0 - 4000 ppm (Standard) 0 - 1000 ppm (Low)	ATEX II 2G EEx d IIC T6 EN 50014, EN 50018 CE, EN IEC 61000-6-2, EN IEC 61000-6-3
	38		GS-1550DS GS-1551DS	Electrochemical	Observer Series Gas Detectors, hydrogen sensors for different ranges; WAD-line Gas Detectors (TX-WAD); Gas detection method: Diffusion	Target gas detection; Production facilities and research centers	0 - 4000 ppm (Standard) 0 - 2000 ppm (Low)	n/a
	39		GS-1550HS GS-1551HS	Electrochemical	Observer Series Gas Detectors, hydrogen sensors for different ranges; WAD-line Gas Detectors (SH-WAD); Multi-point gas sampler/Multi gas sampler; Gas detection method: Suction	Target gas detection; Production facilities and research centers	0 - 4000 ppm (Standard) 0 - 2000 ppm (Low)	n/a
14	40	BlueSens gas sensor GmbH Herten, Germany	BCP-H2	Thermal conductivity	Hydrogen sensor for in-situ measuring	Chemical industry, biogas production, agriculture, algal hydrogen production	0 - 10 vol%, 0 - 50 vol% 0 - 100 vol%	n/a
15	41	Brechtbühler AG Schlieren, CH	H2 Sensor Series 9000	(Thermostated flow-through semiconductor type)	Thermostated flow-through sensor; alarm system, adjustable threshold level; Model for all GC's; H ₂ Sensor Series 9100 for TRACE 1200/1310 Series GC available	Continuous monitoring of the hydrogen concentration in the GC oven	0.5 vol% - 4 vol%	n/a
16	42	Buveco Gasdetection B.V. Bleiswijk, NL	BUCOM ST400EC	Electrochemical	Gas sensor for the detection of hydrogen, P/N 1217513 (0-1000 ppm) P/N 1217521 (0-100% LEL)		0 - 1000 ppm	CE 0344 ATEX II 1G EEx ia IIC T6 KEMA 02 ATEX 1296
	43		BUCOM ST650EX	Catalytic	Gas sensor for the detection of flammable gases		0 - 100 % LEL	ATEX II 2G EEx d IIC T6 KEMA 02 ATEX 2043
17	44	CEA Instruments Inc. Westwood, NJ, USA	TRIPLE PLUS +	Electrochemical	Portable, multi-gas unit, one to four gases; hydrogen-specific sensor heads: S01250 (0-2000 ppm), S011971 (0-4%)		0 - 2000 ppm (S01250) 0 - 4% (S011971)	UL / CSA Class 1, Div. 1, Groups A, B, C, D + other not specified intrinsic safety approvals
	45		TETRA		Portable, multi-gas unit, different gas sensor configurations, monitoring of one to four gases; hydrogen-specific sensor head: S011429 (0-2000 ppm)		0 - 2000 ppm	UL / CSA Class 1, Div. 1, Groups A, B, C, D + other not specified intrinsic safety approvals

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	46		GASMAN H2		Personal mini gas detector, single-gas unit; hydrogen-specific sensor heads: S011429/M (0-2000 ppm Hydrogen) S011460/M (0-100% LEL Flammable Gases)		0 - 2000 ppm, 0 - 100 % LEL Flammable Gases	ATEX II 2G EEx iad IIC T4 (Flammable) Class 1 Groups A, B, C, D Safety Standards: EN 50014, EN 50020, EN 50018, 94/9/EC UL 913, CSA 22.2, 152 Operation Standards: EN50270, EN50271, IEC61508, EN61779 Software designed to meet IEC61508
	47		SERIES U	(Solid state diffusion type)	Gas leak detector; single wall mount, multi-point wall mount, single, 4 and 8 channel, portable; Hydrogen detection unit: H-7200		0 - 1000 ppm, 0 - 5000 ppm, 0 - 20000 ppm (50 % LEL), 0 - 100 % LEL	n/a
	48		CEA 427	(Solid state diffusion type adsorption - desorption type catalyst surface)	Two-wire remote sensor/transmitter; detection based on gas adsorption on active catalyst surface causing a resistance change, solid-state diffusion type sensor Available ranges: 0-1000 ppm, 0-5000 ppm, 0-20,000 (50% LEL), 0-100% LEL		0 - 1000 ppm, 0 - 5000 ppm, 0 - 20000 ppm (50 % LEL), 0 - 100 % LEL	n/a
	49		XGARD Type 1	Electrochemical	Remote gas sensor, wall-mounted unit; specific sensor for hydrogen detection		0 - 200 ppm, 0 - 500 ppm, 0 - 2000 ppm 0 - 2 vol%, 0 - 4 vol%	ATEX II 1 G EEx ia IIC T4 UL Class 1, Div. 1, Groups A, B, C, D EN 50270 (EMC Compliance)
	50		XGARD Type 2	Electrochemical	Remote gas sensor, wall-mounted unit; specific sensor for hydrogen detection, sensors available in flameproof, intrinsically safe or safe area formats for use in all environments		0 - 200 ppm, 0 - 500 ppm, 0 - 2000 ppm 0 - 2 vol%, 0 - 4 vol%	ATEX II 2 G EEx d IIC T6 UL Class 1, Div. 1, Groups B, C, D EN 50270 (EMC Compliance)
	51		XGARD Type 3	Catalytic	Remote gas sensor, wall-mounted unit; specific sensor for hydrogen detection, sensors available in flameproof, intrinsically safe or safe area formats for use in all environments		0 - 100 % LEL	ATEX II 2 G EEx d IIC T4 / EEx d IIC T6 UL Class 1, Div. 1, Groups B, C, D EN 50270 (EMC Compliance)
	52		XGARD Type 4	Catalytic	Remote gas sensor, wall-mounted unit; specific sensor for hydrogen detection, sensors available in flameproof, intrinsically safe or safe area formats for use in all environments		0 - 100 % LEL	ATEX II 2 G EEx d IIC T3 UL Class 1, Div. 1, Groups B, C, D EN 50270 (EMC Compliance)
	53		XGARD Type 5	Catalytic	Remote gas sensor, wall-mounted unit; specific sensor for hydrogen detection, sensors available in flameproof, intrinsically safe or safe area formats for use in all environments		0 - 100 % LEL	ATEX II 2 G EEx d IIC T6 / EEx d IIC T4 UL Class 1, Div. 1, Groups B, C, D EN 50270 (EMC Compliance)

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	54		XGARD Type 6	Thermal conductivity	Remote gas sensor, wall-mounted unit; specific sensor for hydrogen detection, sensors available in flameproof, intrinsically safe or safe area formats for use in all environments		0 - 5 vol%, 0 - 10 vol%, 0 - 50 vol% (in air) 0 - 20 vol%, 0 - 25 vol%, 0 - 30 vol% (in N ₂)	ATEX II 2 G EEx d IIC T6 / EEx d IIC T4 UL Class 1, Div. 1, Groups B, C, D EN 50270 (EMC Compliance)
	55		TXGARD-IS+	Electrochemical	Remote gas sensor, wall-mounted unit; hydrogen-specific sensor heads/ranges: S01176 (0-2000 ppm) S01177 (0-20000 ppm, 50% LEL)		2000, 20000 ppm (50 % LEL)	Ex II 1 GD EEx ia IIC T6 UL Class 1, Div. 1, Groups A, B, C, D
	56		FLAMGARD PLUS	Catalytic	Remote gas sensor, wall-mounted unit; ranges available: 0-100% LEL		0 - 100 % LEL	Ex II 2 G EEx d IIC T6 UL Class 1, Div. 1, Groups B, C, D
18	57	Citizen Finetech Miyota Co. Ltd. Miyota, Japan	CGA-1210	Catalytic	Sensor element on circuit board	Leakage monitoring of hydrogen fuel cell	200 ppm - 4 vol%	n/a
19	58	City Technology Ltd. Portsmouth, UK	3HYE	Electrochemical	3 Series CiTiceL® Hydrogen Sensor Element	Industrial Safety	0 - 10000 ppm nominal 20000 ppm max. overload	n/a
	59		3HYT	Electrochemical	3 Series CiTiceL® Hydrogen Sensor Element	Industrial Safety	0 - 1000 ppm nominal 2000 ppm max. overload	n/a
	60		3MHYE	Electrochemical	Hydrogen sensor with mV output 3 Series, Sensor type used: 3HYE	Industrial Safety	0 - 20000 ppm max.	n/a
	61		3MHYT	Electrochemical	Hydrogen sensor with mV output 3 Series, Sensor type used: 3HYT	Industrial Safety	0 - 2000 ppm max.	n/a
	62		EZT3HYE	Electrochemical	Hydrogen sensor with EasyCal transmitter 3 Series, Sensor type used: 3HYE	Industrial Safety	0 - 20000 ppm precalibrated Recalibration to intermediate ranges available	n/a
	63		EZT3HYT	Electrochemical	Hydrogen sensor with EasyCal transmitter 3 Series, Sensor type used: 3HYT	Industrial Safety	0 - 200 ppm, 0 - 300 ppm 0 - 500 ppm, 0 - 1000 ppm, 0 - 2000 ppm precalibrated, Recalibration to intermediate ranges available	n/a
	64		4HYT	Electrochemical	4 Series CiTiceL® Hydrogen Sensor Element	Industrial Safety	0 - 1000 ppm nominal 2000 ppm max. overload	n/a
	65		7HYE	Electrochemical	7 Series CiTiceL® Hydrogen Sensor Element	Industrial Safety	0 - 10000 ppm nominal 20000 ppm max. overload	n/a
	66		7HYT	Electrochemical	7 Series CiTiceL® Hydrogen Sensor Element	Industrial Safety	0 - 1000 ppm nominal 2000 ppm max. overload	n/a
	67		H2 3E 1%	Electrochemical	Sensoric Hydrogen Sensor Element, designed and manufactured at Sensoric Branch, Bonn	Industrial Safety	0 - 10000 ppm	n/a
	68		H2 3E 4%	Electrochemical	Sensoric Hydrogen Sensor Element, designed and manufactured at Sensoric Branch, Bonn	Industrial Safety	0 - 4 % (100 % LEL)	n/a

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	69		I3H	Electrochemical	3 Series, Sensor type used: 3H Specified as H ₂ S gas detector in data sheet with H ₂ cross sensitivity; search result für H ₂ sensor	Automotive	0 - 300 ppm; eight precalibrated ranges and recalibration to intermediate ranges available	n/a
	70		I3HYE	Electrochemical	Hydrogen sensor with transmitter 3 Series, Sensor type used: 3HYE	Automotive	0 - 20000 ppm, 0 - 50000 ppm precalibrated, Recalibration to intermediate ranges available	n/a
	71		I3HYT	Electrochemical	Hydrogen sensor with transmitter 3 Series, Sensor type used: 3HYT	Automotive	0 - 2000 ppm; five precalibrated ranges and recalibration to intermediate ranges available	n/a
	72		4P50M	Catalytic Pellistor	CiTiPeL®, portable, combustible gas sensor Gases detected: methane and hydrogen		0- 100 % LEL	CSA C22.2 No 30-M1986 Class 1, Div. 1, Groups A, B, C, D UL 913 Class 1, Groups A, B, C, D EN 60079-0:2006, EN 60079-1:2007 ATEX II 2 G Ex d IIC T6 Gb CE 518
	73		4P75M	Catalytic Pellistor	CiTiPeL®, portable, combustible gas sensor Gases detected: methane and hydrogen		0 - 100 % LEL	CSA C22.2 No 30-M1986 Class 1, Div. 1, Groups A, B, C, D UL 913 Class 1, Groups A, B, C, D EN 60079-0:2006, EN 60079-1:2007 ATEX II 2 G Ex d IIC T6 Gb CE 518
	74		4P90M	Catalytic Pellistor	CiTiPeL®, portable, Search engine result, not hydrogen-specific	Combustible gas sensor	0 - 100 % LEL	CSA C22.2 No 30-M1986 Class 1, Div. 1, Groups A, B, C, D UL 913 Class 1, Groups A, B, C, D EN 60079-0:2006, EN 60079-1:2007 ATEX II 2 G Ex d IIC T6 Gb CE 518
20	75	Compur Monitors GmbH & Co. KG München, Germany	Stattox 501		Gas detection system for combustible gases, system comprising sensor head and controller modules; Specific hydrogen sensor heads available for 0 - 150 / 300 / 1000 ppm measuring range Compur 5803 163 (HRC / ARE) E2V VQ 641TS (LRC)	Stationary Gas Warning System	0 - 150 / 300 / 1000 ppm	ATEX II 2 G EEx de IIC T6 (HRC/ARE sensor head) ATEX II 2 G EEx de IIC T5 (LRC sensor head)
	76		Stattox 505	Electrochemical	Transmitter according to SIL2 Standard; hydrogen sensor head with measuring range 0-300 ppm	Stationary Gas Warning System	300 ppm, 1000 ppm	EMC Compliance: EN 50270; ATEX II 2 G Ex ib IIC T4 (EN 60079-0, EN 60079-11) BVS Certificate; SIL 2 (Functional safety)

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21	77	Control Instruments Corporation Fairfield, NJ, USA	SNR476	Electrochemical Micro fuel cell	Hydrogen Sensor for SmartMaxII stand-alone controller	Monitoring of hydrogen gas	0 - 1000 ppm (standard range; 0 - 2000 ppm available)	n/a
22	78	COSA Xentaur Yaphank, NY, USA	CHA Continuous Hydrogen Analyzer	Electrochemical Potentiometric proton conducting polymer membrane	Unique, patented electrochemical sensor; direct and specific measurement of hydrogen, continuous signal outout corresponding to hydrogen concentration	Refining, petrochemical, electric power applications; Hydrogen production, hydrogen-cooled power generation; Hydrogen/hydrocarbon ratio, isomerization	0.04 - 100 vol%	Ex
23	79	Crowcon Detection Instruments Ltd. Abingdon, UK	TETRA		Personal multigas monitor, detection of flammable gases, oxygen and a wide range of toxic gases		0 - 1000 ppm (typ.)	ATEX II 2G Ex ia d IIC T3 Gb IECEX Ex ia d IIC T3 Gb CSA UL/cUL Class 1, Div. 1, Groups A, B, C, D, T3C Safety standards: EN60079-0, EN60079-11, EN60079-1, 94/9/EC UL913, CSA22.2, 152 EN50270, EN50271, IEC61508, EN61779, EN45544
	80	Note: Same product names as CEA Instruments	TRIPLE PLUS +	Electrochemical	Portable multigas monitor, detection of flammable gases, oxygen and toxic gases; specific hydrogen sensor available		0 - 100 % LEL	ATEX II 2G Ex ib d IIC T4 Gb Class 1, Div. 1, Groups A, B, C, D Safety standards: EN50014, EN50020, 94/9/EC, EN50081-2, EN50270, EN50082-2 UL 913, CSA 22.2 No.157 SFA3009
	81		FLAMGARD PLUS	Catalytic Pellistor	Flameproof flammable gas detector, detection of explosive levels of hydrocarbons, hydrogen and other flammable gases and vapours.		0 - 100 % LEL	ATEX II 2 G Ex d IIC T6 UL Class 1, Zone 1 EN 50270, FCC, ICES-003 (EMC Compliance)
	82		TXGARD-IS+	Electrochemical	Intrinsically safe toxic gas detector suitable for hydrogen detection		2000 ppm, 50 % LEL, 100 % LEL	ATEX, IECEx II 1 G Ex ia IIC T4 Ga UL, cUL Class 1, Groups A, B, C, D EN 50270, FCC. ICES-003 (EMC Compliance)
	83		40/40 Series Flame Detector	Optical IR based	Detector for detecting flames at a distance, including gas and fuel fires from hydrocarbons, hydrogen, etc. Manufacturer: Spectrex Inc.		n/a	
24	84	C-Squared Inc. Anaheim, CA, USA	Hycision 10M	Thermal conductivity	Hydrogen sensing module		0 - 10 vol%	n/a
	85		Hycision 100M	Thermal conductivity	Hydrogen sensing module		0 - 100 vol.%	n/a
	86		Hycision 10	Thermal conductivity	Hydrogen Analyzer, hand-held unit; uses hydrogen sensing module 10M		0 - 10 vol%	n/a
	87		Hycision 100	Thermal conductivity	Hydrogen Analyzer, hand-held unit; uses hydrogen sensing module 100M		0 - 100 vol%	n/a

The "H2Sense Hydrogen Sensor Database"

No. M	No. S	Manufacturer City, Country	Sensor Model	Technology	Description / Remark	Application	Detection Range (H ₂)	Certificates / Approvals / Tests / Classification
25	88	DET-TRONICS Minneapolis, MN, USA	GT3000	Electrochemical	Fixed-point toxic Gas Detector for continuous monitoring; sensor includes Transmitter (GTX) and Sensor Module (GTS); Different sensors for detection of a list of gases, including hydrogen, are available.	Gas leak detection, continuous monitoring of atmosphere	0 - 1000 ppm	Explosion-Proof Model FM/CSA: Class I, Div. 1, Groups A, B, C, D (T4) Class I, Div. 2, Groups A, B, C, D (T4) Class I, Zone 1, AEx d mb [ia Ga] IIC T4 IP66 ATEX: CE 0539 II 2(1)G Ex d mb [ia Ga] IIC T4 Gb IP66 IECEx: Ex d mb [ia Ga] IIC T4 Gb IP66 Intrinsically Safe Model FM: IS Class I, Div. 1, Groups A, B, C, D (T4) Class I, Zone 0, AEx ia IIC (T4), IP66 CSA: Class I, Div. 1 & 2, Groups A, B, C, D (T4) IP66. ATEX: CE 0539 II 1 G Ex ia IIC T4, IP66. IECEx: Ga Ex ia IIC T4, IP66
	89		X3302	Optical IR Spectroscopy	Hydrogen Flame Detector; Sensor uses multispectrum infrared (MIR) technology focusing on the water-band IR emissions of the hydrogen flame (H ₂ O vapor)	Hydrogen fire/flame detection in e.g. refineries, chemical loading, battery rooms, compressor areas, generators, refrigerants, gas plants.	n/a	n/a
26	90	Dextens SA Geneva, Switzerland	H2 52201	Thermal conductivity	for H ₂ , CO ₂ and N ₂ measurements	also for hydrogen solved in liquids	0 - 2 ppm, 0 - 10 ppm	IP65
27	91	Dräger Safety AG & Co. KGaA Lübeck, Germany	DrägerSensor® DD	Catalytic Pellistor	Sensor element; Versions available: HT M DD, PR M/NPT DD, LC M/NPT DD; HT: high temperature; PR: poison resistant; M/NPT: metric/NPT thread; LC: low concentration; Sensors for use in: Dräger Polytron SE Ex Fixed Gas Detectors	Detection of combustible gases: hydrogen, etc.	n/a	n/a
	92		DrägerSensor® Smart Cat Ex	Catalytic	Sensor element	Measurement of combustible gases and vapours in air, multiple gas detection	n/a	n/a
	93		DrägerSensor® XS P/N 68 09 185	Electrochemical	Toxic gas and vapour sensor element for use in portable gas detectors	Detection of toxic gases and vapours, P/N for hydrogen-specific sensor head	0 - 2000 ppm	n/a
	94		DrägerSensor® XS P/N 68 11 365	Electrochemical	Toxic gas and vapour sensor element for use in portable gas detectors	Detection of toxic gases and vapours, P/N for hydrogen-specific sensor head	0 - 4 vol%	n/a
	95		Polytron SE Ex PR ... DD	Catalytic Pellistor	Fixed gas detector, four housing options (M1, M2, M3, NPT1)	Continuous monitoring of combustible gases and vapours in ambient air;	n/a	94/9/EG: EN 60079-29-1

The "H2Sense Hydrogen Sensor Database"

No. M	No. S	Manufacturer City, Country	Sensor Model	Technology	Description / Remark	Application	Detection Range (H ₂)	Certificates / Approvals / Tests / Classification
	96		Polytron SE Ex LC ... DD	Catalytic Pellistor	Fixed gas detector, four housing options (M1, M2, M3, NPT1)	Continuous monitoring of combustible gases and vapours in ambient air; Target gases: hydrogen, etc.	n/a	94/9/EG: II 2 G Ex de IIC T6/T5/T4 Gb (M1 - M3) II 2 G Ex d IIC T6/T5/T4 Gb (NPT1) II 2 D Ex tD A21 IP 6x T130°C IECEX: Ex de IIC T6/T5/T4 Gb (M1 - M3)
	97		Polytron SE Ex HT M DD	Catalytic Pellistor	Fixed gas detector, high temperature housing	Continuous monitoring of combustible gases and vapours in ambient air; Target gases: hydrogen, etc.	n/a	94/9/EG: EN 60079-29-1 II 2 G Ex d IIC T3 II 2 D Ex tD A21 IP 6x T195°C (valid for sensor; slightly different for housing and cable fitting)
	98		Polytron 3000	Catalytic Pellistor	Fixed gas detector	Continuous monitoring of toxic gases in ambient air; gases: hydrogen etc.	various, not specified	ATEX II 1G EEx ia IIC T6/T4 II 3G EEx nL IIC T6/T4 II 3D IP6x T65 °C
28	99	Element One Inc. Boulder, CO, USA	Under development	Optical Chemochromic	Hydrogen indicating sensor, color change of metal oxide film on substrate in the presence of gaseous hydrogen	Leak detection applications: Storage Tanks, Connectors, Fuel Cells, Fuel Reformers, Connection Hardware, Grounding Connections, Hoses, and anywhere hydrogen is used.	n/a	n/a
29	100	ENMET Corp. Ann Arbor, MI, USA	EX 5100	Catalytic Pellistor	Combustible Gas Sensor/Transmitter, Fixed gas monitoring system		0 - 100 % LEL	Sensor Head: ATEX Enclosure: Class I, Groups B, C, D Class II, Groups E, F, G CENELEC: EEx d IIC, IP66 FM 3615; CSA C22.2 No. 30; UL 1203 CENELEC EN 50014, 50018
	101		EX 5175 P/N 10014-1500	Electrochemical	Explosion-proof sensor/transmitter for specific target gas; Hydrogen: P/N 10014-1500; Fixed gas monitoring system		24 ppm (LDL) - 2000 ppm	Class I, Div. 1, Groups B, C, D UL 916 (3rd ed.), UL 1203 (4th ed.) CSA 22.2, No. 0-M91, 30-M1986, 142-M1987
	102		SDS-1500-97D	Electrochemical	Sensor/Transmitter for specific target gas, including a wide range of toxic gases, hydrogen, oxygen; Hydrogen: P/N 10022-1500		24 ppm (LDL) - 2000 ppm	n/a
	103		ProAir 2200	Electrochemical	Gas monitor für process compressed air lines, specific target gas; Hydrogen configuration option available		0 - 2000 ppm	UL 60601-1 IEC 60601-1 CSA 22.2, No. 601.1
	104		GSM 60	Electrochemical	Gas sampling monitor with internal pump, sensors for up to four specific target gases; Hydrogen configuration option available		0 - 2000 ppm	n/a
	105		PGD2	Catalytic	4-Gas Portable Detector, sensor for flammable gas, not hydrogen-specific		n/a	ATEX II 2 G EEx ia IIC T3 CE; EN 50081-2, EN 50082-1, EN 550022

The "H2Sense Hydrogen Sensor Database"

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30	106	Environment One Corporation Niskayuna, NY, USA	GGA	Thermal conductivity	Generator Gas Analyzer	Hydrogen-cooled generators, continuous monitoring of gas purity during all phases of generator operation	70 - 100 % H ₂ in air 0 - 100 % H ₂ in CO ₂	Class I, Zone 2, Group IIB + H ₂
	107		PGA	Thermal conductivity	Portable Hydrogen Gas Analyzer	non-hazardous environments	70 - 100 % H ₂ in air 0 - 100 % H ₂ in CO ₂	n/a
31	108	ESCUBE GmbH & Co. KG Stuttgart, Germany	HydroSEN	Electrochemical	solid-state electrolyte (ZrO ₂)	Safety and leak monitoring applications, e.g. of fuel cells or electrolyzers	0 - 1000 ppm / 0 - 10000 ppm (max. 50 % LEL)	n/a
32	109	ExTox Gasmess-Systeme GmbH Unna, Germany	H2-2-EC	Electrochemical	Hydrogen Transmitter; 0...2 Vol%; explosion-proof version available	Industrial	0 - 2 vol%	Sens Series: 2004/108/EG (EMV) 94/9/EG (ATEX) CE Ex II 3 G Ex nA IIC T6 X EN 60079-29-1 ExSens Series: 2004/108/EG (EMV) 94/9/EG (ATEX) CE 0158 Ex II 2 G EN 60079-1, EN 60079-29-1 Ex d IIC T5 Gb, Ex d IIC T4 Gb
	110		H2-30-EC	Electrochemical	Hydrogen Transmitter; 0...30 Vol%	Industrial; main application: gas analysis in combination with gas withdrawal system	0 - 30 vol%	Sens Series only: 2004/108/EG (EMV) 94/9/EG (ATEX) CE Ex II 3 G Ex nA IIC T6 X EN 60079-29-1
	111		H2-1000-EC	Electrochemical	Hydrogen Transmitter; 0...1000 ppm; explosion-proof version available, version including activated carbon filter for biogas analysis available	Bio gas analysis	0 - 1000 ppm	Sens Series: 2004/108/EG (EMV) 94/9/EG (ATEX) CE Ex II 3 G Ex nA IIC T6 X EN 60079-29-1 ExSens Series: 2004/108/EG (EMV) 94/9/EG (ATEX) CE 0158 Ex II 2 G EN 60079-1, EN 60079-29-1 Ex d IIC T5 Gb, Ex d IIC T4 Gb
	112		BG-HL	Resistive Metal oxide semiconductor	Flammable Gas Transmitter; 0...100% LEL; Target gases: Hydrogen, etc. explosion-proof version available	Ambient air monitoring, etc.	0 - 100 % LEL	Sens Series: 2004/108/EG (EMV) EN 60079-29-1 ExSens Series: 2004/108/EG (EMV) 94/9/EG (ATEX) CE 0158 Ex II 2 G EN 60079-1, EN 60079-29-1 Ex d IIC T4 Gb

The "H2Sense Hydrogen Sensor Database"

No. M	No. S	Manufacturer City, Country	Sensor Model	Technology	Description / Remark	Application	Detection Range (H ₂)	Certificates / Approvals / Tests / Classification
	113		BG-5000-HL	Resistive Metal oxide semiconductor	Flammable Gas Transmitter, 0...5000 ppm; Target Gases: Hydrogen, etc. explosion-proof version available	Leakage and trace analysis, etc.	0 - 5000 ppm	Sens Series: 2004/108/EG (EMV) EN 60079-29-1 ExSens Series: 2004/108/EG (EMV) 94/9/EG (ATEX) CE 0158 Ex II 2 G EN 60079-1, EN 60079-29-1 Ex d IIC T4 Gb
	114		BG-WT	Thermal conductivity	Flammable Gas Transmitter, 0...100% LEL; Target Gases: all flammable gases; explosion-proof version available	Explosion protection	0 - 100 % LEL	Sens Series: 2004/108/EG (EMV) EN 60079-29-1 ExSens Series: 2004/108/EG (EMV) 94/9/EG (ATEX) CE 0158 Ex II 2 G EN 60079-1, EN 60079-29-1 Ex d IIC T4 Gb
	115		H2-100-WLD H2-30-WLD H2-10-WLD	Thermal conductivity	Transmitter for basic device	gas analysis, using with sampler ExTox IMC	0 - 100 vol% H ₂ 0 - 30 vol% H ₂ 0 - 10 vol% H ₂	
33	116	Figaro USA Inc. Glenview, IL, USA	TGS821	Resistive Semiconductor (SnO ₂)	Sensor element; high sensitivity and selectivity to hydrogen gas; conductivity increase with gas concentration	Hydrogen gas detection for transformer maintenance, batteries, steel industry usage, etc.	50 - 1000 ppm	n/a
	117		TGS813	Resistive Semiconductor (SnO ₂)	Sensor element; detection of combustible gases, not hydrogen-specific, ideal for monitoring natural gas and LPG	Domestic gas leak detectors and alarms, portable gas detectors	n/a	n/a
	118		TGS6812	Catalytic	Sensor element; sensitive to hydrogen, methane and LP gas, high accuracy, good durability and stability, quick response, low sensitivity to alcohol, compact size	Hydrogen and combustible gas leak detector for fuel cells/stationary fuel cell systems; Detection of hydrogen, methane and LP gas	0 - 100 % LEL	n/a
34	119	FIS Inc. Hyogo, Japan	SB-19-00	Resistive Semiconductor (SnO ₂)	Sensor element; excellent sensitivity and selectivity to hydrogen	hydrogen detection	n/a	n/a
	120		SP-19-01	Resistive Semiconductor (SnO ₂)	Sensor element; high sensitivity and selectivity to hydrogen	hydrogen detection	n/a	n/a
	121		SB-42A-11		no specification available	Hydrogen detection in fuel cells / automotive	n/a	n/a
35	122	General Monitors Lake Forest, CA, USA	45186-12	Electrochemical	Electrochemical sensor element for hydrogen detection	Hydrogen detection	0 - 500 ppm	CSA, FM, ATEX, CE, SIL
	123	Note: Website very similar to MSA	10164-1	Catalytic	Hydrogen specific catalytic bead sensor element	Hydrogen detection	0 - 100 % LEL	CSA approved Class 1, Div. 1, Groups B, C, D

The "H2Sense Hydrogen Sensor Database"

No. M	No. S	Manufacturer City, Country	Sensor Model	Technology	Description / Remark	Application	Detection Range (H ₂)	Certificates / Approvals / Tests / Classification
	124		TS4000H	Electrochemical	Toxic Gas Detector, measured gases includes hydrogen		0 - 500 ppm	Base Unit: CSA: Class I, Div. 1 & 2, Groups B, C, D; Class II, Div. 1 & 2, Groups E, F, G; Class III, Type 4X ATEX/IECEx: Ex d IIB + H ₂ T5 Gb Interface Module: CSA: Ex d ia IIB + H ₂ T5 ATEX/IECEx: Ex d mb ib IIC Gb Approvals: CSA, ATEX, GOST, IECEx and CE Marking. HART registered. SIL 2 suitable (FM). EMC: EN 50081-2, EN 50270
	125		S4000CH	Catalytic	Combustible Gas Detector		0 - 100 % LEL	Electrical Classification: CSA/FM Class I, Div. 1, Groups B, C, D Class I, Zone 1, IIB + H ₂ , T6, Type 4X ATEX II 2 G EEx d lib + H ₂ T5, IP66 Approvals: CE, CSA, FM, ATEX, IECEx Compliance with ANSI/ISA 12.13.01-2000, EN 61779-1, -4 HART registered, SIL 2 / 3 suitable RFI/EMI Protection: Compliance with EN 50270, EN 61000-6-4
	126		S4100C	Catalytic	Combustible Gas Addressable Transmitter		0 - 100 % LEL	Approvals: ATEX II 2 G EEx em II T5 & T4, IP 66/67 Compliance with EN 61779-1, -4 EMI/RFI: EN 50082-2, EN 50081-1/2
	127		GASSONIC Surveyor	Acoustic Ultrasonic	Non-concentration based gas detector for leak detection from high-pressure systems, detector responds to ultrasound generated from gas releases	hydrogen storage facilities gas compressor and metering stations	25 - 70 kHz 44 - 104 dB (dynamic range)	Electrical Classification: ATEX: II 2G EEx ia IIC T4 IECEx: EEx ia IIC T4 Approvals: ATEX, IECEx, IEC 61508 certified to SIL 1 & 2
	128		GASSONIC Observer-H	Acoustic Ultrasonic	non-concentration based gas detector for leak detection from high-pressure systems, detector responds to ultrasound generated from gas releases	hydrogen storage facilities gas compressor and metering stations	25 - 70 kHz 58 - 104 dB (dynamic range)	Electrical Classification: CSA/FM: Class I, Div 1 & 2, Groups B, C, D; Class II/III, Div 1 & 2, Groups E, F, & G; Type 4X ATEX/IECEx: Ex d ia IIB + H ₂ T6 Gb Ex tb IIC T85°C Db; IP66 Approvals: FM, CSA, ATEX, IECEx, FM certified to IEC 61508, SIL 3 suitable, HART registered. RFI/EMI Protection: Complies with EN61000-6-2 and EN61000-6-4

The "H2Sense Hydrogen Sensor Database"

No. M	No. S	Manufacturer City, Country	Sensor Model	Technology	Description / Remark	Application	Detection Range (H ₂)	Certificates / Approvals / Tests / Classification
36	129	GFG Dortmund, Germany	GMA36 Pro	Electrochemical	Complete transmitter and controller in one unit, wall-mounted, sensor according to target gas: Hydrogen, etc. Three detection ranges for Hydrogen available: 0-2000 ppm, 0-1% vol., 0-4% vol.	Continuous surveillance of toxic gases, oxygen and hydrogen	0 - 2000 ppm 0 - 1 vol% 0 - 4 vol%	EMC: EN 61000-6-3, EN 61000-6-4, EN 50270 Type 1 and Type 2
	130		Micro IV	Electrochemical	Single gas detector, sensor according to target gas: Hydrogen, etc.	Single gas detection of toxic gases, oxygen and hydrogen	2000 ppm 4 vol%	Approval: ATEX II 2 G EEx ib IIC T4/T3
	131		Microtector II G460	Electrochemical	7-Gas Detector, 5 sensor positions, sensors according to target gas: Hydrogen, etc.	Continuous and selective measurement of seven gases simultaneously	0 - 2000 ppm 0 - 1 vol% 0 - 4 vol%	ATEX II 2 G Ex ia de IIC T4/T3 EN 60079-29-1 EN 50270:1999
37	132	H2Scan Corp. Valencia, CA, USA	HY-ALERTA 500	Two sensor elements: Work function MOS capacitor & Resistive Pd/Ni thin film resistor	Handheld hydrogen leak detector; Hydrogen Sensitivity Range: 15 ppm to 100% hydrogen by volume, No peripheral equipment needed	Portable hydrogen leak detector; locating source of hydrogen leak where hydrogen gas is produced, used, transported, or stored	15 ppm - 100 vol%	cUL, CE
	133		HY-ALERTA 600	Resistive Pd/Ni thin film resistor	Fixed area hydrogen safety monitor; Hydrogen Sensitivity Range: 0.4% to 5.0% hydrogen by volume,	Hydrogen-specific leak detection and measurement	0.4 - 5 vol% 10 - 125 % LFL	cUL, CE
	134		HY-ALERTA 1600	Resistive Pd/Ni thin film resistor	Fixed area hydrogen safety monitor, intrinsically safe. Hydrogen Sensitivity Range: 0.4% to 5.0% hydrogen by volume,	Hydrogen-specific leak detection and measurement	0.4 - 5 vol% 10 - 125 % LFL	Certification: CE 0359, ATEX II 1 G, Ex ia II H ₂ , d+d IIB T3 II 2 G, Ex ib II H ₂ , ib d IIB T3
	135		HY-ALERTA 2600	Resistive Pd/Ni thin film resistor	Fixed area hydrogen safety monitor, explosion-proof. Hydrogen Sensitivity Range: 0.4% to 5.0% hydrogen by volume,	Hydrogen-specific leak detection and measurement	0.4 - 5 vol% 10 - 125 % LFL	cUL, FM Class I Group B, C, D; Class II Group E, F, G; Class III Type 4X Class I Zone 1 AEx d IIC
	136		HY-OPTIMA 2700AS	Resistive Pd/Ni thin film resistor	Process Hydrogen Analyzing System, complete solution. Hydrogen Sensitivity Range: 0.5% to 100% hydrogen by volume at 1 ATM	Process hydrogen measurement in refineries, chemical plants, air separation units and industrial gas manufacturing plants	0.5 - 100 vol% (@ 1 ATM)	UL Class I, Div. 1 Groups B, C, D ATEX Ex Proof Ex d IIB + H ₂ T4 Gb
	137		HY-OPTIMA 2700	Resistive Pd/Ni thin film resistor	Real time hydrogen-specific in-line process analyzer, operation in process gas streams, explosion-proof. Hydrogen Sensitivity Range: 0.5% to 100% hydrogen by volume at 1 ATM	Ideal for hydrogen production and petrochemical applications (where real-time measurements of hydrogen can enhance process plant efficiencies, diagnostics and maintenance management)	0.5 - 100 vol% (@ 1 ATM)	Certifications UL, CE 0359 UL 508, 1203 USC Class I, Div. 1, Groups B, C, D Hazardous (Classified) II 2 G Ex d IIB + H ₂ T4 Gb Remote: UL 913, CAN/CSA C22.2 No. 157-92 Ex ia IIC T4 Ga

The "H2Sense Hydrogen Sensor Database"

No. M	No. S	Manufacturer City, Country	Sensor Model	Technology	Description / Remark	Application	Detection Range (H ₂)	Certificates / Approvals / Tests / Classification
	138		HY-OPTIMA 2720	Resistive Pd/Ni thin film resistor	Real time hydrogen-specific in-line process analyzer, operation in air & nitrogen background gas streams, explosion-proof. Hydrogen Sensitivity Range: 0.4% to 5% hydrogen by volume at 1 ATM	Ideal for hydrogen processes (where real-time measurements of hydrogen can ensure safety in application, increase process efficiencies, improve diagnostics and enhance maintenance management)	0.4 - 5 vol% (@ 1ATM)	Certifications UL, CE 0359 UL 508, 1203 USC Class I, Div. 1, Groups B, C, D Hazardous (Classified) II 2 G Ex d IIB + H ₂ T4 Gb Remote: UL 913, CAN/CSA C22.2 No. 157-92 Ex ia IIC T4 Ga
	139		HY-OPTIMA 2730	Resistive Pd/Ni thin film resistor	Real time hydrogen-specific in-line process analyzer, operation in background gas streams having CO concentrations up to 100 ppm, H ₂ S concentrations up to 1000 ppm, explosion-proof. Hydrogen Sensitivity Range: 0.5% to 100% hydrogen at 1 ATM on a volume basis in a single or multicomponent gas background	Ideal for hydrogen production and petrochemical applications (where real-time measurements of hydrogen can increase process plant efficiencies, improve diagnostics and enhance maintenance management)	0.5 - 100 vol% (@ 1 ATM)	UL Class I, Div. 1, Groups B, C, D ATEX II 2 G Ex d IIB + H ₂ T4 Gb
	140		HY-OPTIMA 2740	Resistive Pd/Ni thin film resistor	Real time hydrogen-specific in-line process analyzer, operation in background gas streams having CO concentrations up to 20% by volume, H ₂ S concentrations up to 10% by volume, explosion-proof. Hydrogen Sensitivity Range: 0.5% to 100% hydrogen at 1 ATM on a volume basis in a single or multicomponent gas background	Ideal for hydrogen production and petrochemical applications (where real-time measurements of hydrogen can increase process plant efficiencies, improve diagnostics and enhance maintenance management)	0.5 - 100 vol% (@ 1 ATM)	UL Class I, Div. 1, Groups B, C, D ATEX II 2 G Ex d IIB + H ₂ T4 Gb
	141		HY-OPTIMA 1700AS	Resistive Pd/Ni thin film resistor	Process Hydrogen Analyzing System; complete solution. Hydrogen Sensitivity Range: 0.5% to 100% hydrogen by volume at 1 ATM	Process hydrogen measurement in refineries, chemical plants, air separation units and industrial gas manufacturing plants	0.5 - 100 vol% (@ 1 ATM)	n/a
	142		HY-OPTIMA 1700	Resistive Pd/Ni thin film resistor	Real time hydrogen-specific in-line process analyzer, operation in background gas streams, intrinsically safe. Hydrogen Sensitivity Range: 0.5% to 100% hydrogen by volume at 1 ATM	Ideal for process gas streams containing virtually no contaminants (where real time continuous measurements of hydrogen can increase process plant efficiencies, improve diagnostics and enhance maintenance management)	0.5 - 100 vol% (@ 1 ATM)	Certifications CE 0359, ATEX II 1 G, Ex ia II H ₂ , d+d IIB T3 II 2 G, Ex ib II H ₂ , ib d IIB T3

The "H2Sense Hydrogen Sensor Database"

No. M	No. S	Manufacturer City, Country	Sensor Model	Technology	Description / Remark	Application	Detection Range (H ₂)	Certificates / Approvals / Tests / Classification
	143		HY-OPTIMA 1720	Resistive Pd/Ni thin film resistor	Real time hydrogen-specific in-line process analyzer, operation in air and Nitrogen background gas streams, intrinsically safe. Hydrogen Sensitivity Range: 0.4% to 5% hydrogen by volume at 1 ATM	Ideal for the detection of hydrogen within processes (where real-time monitoring can increase plant safety, improve process diagnostics and enhance maintenance management)	0.4 - 5 vol% (@ 1ATM)	Certifications CE 0359, ATEX II 1 G, Ex ia II H ₂ , d+d IIB T3 II 2 G, Ex ib II H ₂ , ib d IIB T3
	144		HY-OPTIMA 1730	Resistive Pd/Ni thin film resistor	Real time hydrogen-specific in-line process analyzer, operation in background gas streams having CO concentrations up to 100 ppm, H ₂ S concentrations up to 1000 ppm, intrinsically safe. Hydrogen Sensitivity Range: 0.5% to 100% hydrogen at 1 ATM	Ideal for hydrogen gas production, petroleum refining and petrochemical applications (where continuous real time measurements of hydrogen can increase process plant efficiencies, improve diagnostics and enhance maintenance management)	0.5 - 100 vol% (@ 1 ATM)	Certifications CE 0359, ATEX II 1 G, Ex ia II H ₂ , d+d IIB T3 II 2 G, Ex ib II H ₂ , ib d IIB T3
	145		HY-OPTIMA 1740	Resistive Pd/Ni thin film resistor	Real time hydrogen-specific in-line process analyzer, operation in background gas streams having CO concentrations up to 20% by volume, H ₂ S concentrations up to 10% by volume, intrinsically safe. Hydrogen Sensitivity Range: 0.5% to 100% hydrogen by volume at 1 ATM	Ideal for hydrogen gas production, petroleum refining and petrochemical applications (where real-time measurements can enhance process plant efficiencies, diagnostics and maintenance management)	0.5 - 100 vol% (@ 1 ATM)	Certifications CE 0359, ATEX II 1 G, Ex ia II H ₂ , d+d IIB T3 II 2 G, Ex ib II H ₂ , ib d IIB T3
	146		HY-OPTIMA 700	Resistive Pd/Ni thin film resistor	Real time hydrogen-specific in-line process analyzer, operation in process gas streams. Hydrogen Sensitivity Range: 0.5% to 100% hydrogen by volume at 1 ATM	Ideal for hydrogen production and petrochemical applications (where real-time measurements can enhance process plant efficiencies, diagnostics and maintenance management)	0.5 - 100 vol% (@ 1 ATM)	cUL, CE
	147		HY-OPTIMA 720AS-GC	Resistive Pd/Ni thin film resistor	In-Line Hydrogen Analyzing System for Gas Chromatography Systems. Hydrogen Sensitivity Range: 0.5% to 5% hydrogen at 1 ATM on a volume basis in a single or multi-component gas background	Hydrogen Analyzing System to detect, measure and respond to hydrogen leaks in gas chromatography (GC) systems.	0.5 - 5 vol% (@ 1 ATM)	n/a
	148		HY-OPTIMA 720	Resistive Pd/Ni thin film resistor	Real time hydrogen-specific in-line process analyzer, operation in air and nitrogen background gas streams. Hydrogen Sensitivity Range: 0.4% to 5% hydrogen by volume at 1 ATM	Ideal for monitoring of hydrogen processes (where real-time measurements can ensure safety in application, increase process efficiencies, improve diagnostics and enhance maintenance management)	0.4 - 5 vol% (@ 1ATM)	cUL, CE

The "H2Sense Hydrogen Sensor Database"

No. M	No. S	Manufacturer City, Country	Sensor Model	Technology	Description / Remark	Application	Detection Range (H ₂)	Certificates / Approvals / Tests / Classification
	149		HY-OPTIMA 730	Resistive Pd/Ni thin film resistor	Real time hydrogen-specific in-line process analyzer, operation in background gas streams having CO concentrations up to 100 ppm, H ₂ S concentrations up to 1000 ppm. Hydrogen Sensitivity Range: 0.5% to 100% hydrogen at 1 ATM on a	Ideal for hydrogen production and petrochemical applications (where real-time measurements can enhance process plant efficiencies, diagnostics and maintenance management)	0.5 - 100 vol% (@ 1 ATM)	cUL, CE
	150		HY-OPTIMA 740	Resistive Pd/Ni alloy thin film resistor	Real time hydrogen-specific in-line process analyzer, operation in background gas streams having CO concentrations up to 20% by volume, H ₂ S concentrations up to 10% by volume. Hydrogen Sensitivity Range: 0.5% to 100% hydrogen at 1 ATM on a	Ideal for hydrogen production and petrochemical applications (where real-time measurements can enhance process plant efficiencies, diagnostics and maintenance management)	0.5 - 100 vol% (@ 1 ATM)	cUL, CE
	151		OEM Sub-system	Resistive Pd/Ni thin film resistor	Hydrogen sensing technology is available for integration into customer product as an OEM assembly.	Applications suitable for custom configuration: Fuel Cell, stationary, vehicle, fuel cell bus garages Battery rooms Process control Nuclear, waste and plants Transformer monitoring etc.		
38	152	Henan Hanwei Electronics Co. Zhengzhou, China	MQ-2	Resistive Semiconductor (SnO ₂)	Combustible gas sensor element, not hydrogen specific, detects LPG, Propane, Hydrogen etc. conductivity increase with detectable gas concentration cf. Winsen Electronics, same product!	Combustible gas sensor	300 - 5000 ppm	n/a
	153		MQ-8	(Semiconductor)	no specification available	Hydrogen gas sensor	n/a	n/a
39	154	Honeywell Analytics Uster, CH	MIDAS	Electrochemical	Extractive transmitter with sensor, gas monitoring system. Hydrogen detection cartridge MIDAS-S-H ₂ X / MIDAS-E-H ₂ X or MIDAS-S-LEL is used for hydrogen detection	Typical industrial process environment; for gases used or generated in the semiconductor and other industrial manufacturing applications	0 - 100 % LEL 0 - 1000 ppm	CE marked; EN 50270:1999 (Type2), EN 55011:2000 ETL approved UL 61010B, CSA-C22.2 No. 1010.1-92 Designed to meet with UL 2075 Electrical: IEEE 802.3af-2003
	155		Apex	Electrochemical	Transmitter with sensor, sensor mounted directly on transmitter or remotely up to 100m away. Large choice of toxic gas ranges and wide range of detectable flammable gases; Hydrogen detection cartridge is used for hydrogen detection	Petrochemical: exploration drilling rigs, ... Heavy industrial: Steel manufacture, ... Manufacturing: Automotive, ... Pharmaceutical: research labs, ...	0 - 1000 ppm	CE Approved to all applicable European directives. EMC EN 50270:2006 Performance Standards Exam (DMT) EN50054 / 50057 / 50271. CSA C22.2 No.152 Certification ATEX II 2 G D Ex d ia IIC Ex tD A21 IP67 UL: Class I, Div. 1, Groups B, C, D, T4 / T5 CSA: Class I, Div. 1, Groups B, C, D C22.2 No. 152, T4 / T5

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	156		Sensepoint Combustible	Catalytic Poison resistant bead	Combustible Gas Sensor, suitable for hydrogen detection	Indoor, outdoor, potentially explosive environments	0 - 100 % LEL 0 - 10 % LEL	ATEX / IECEx II 2 GD Ex d IIC Gb tb IIIC A21 Db IP67 Compliance with CE standards including EN 50270 (EMC), EN 60079-29-1
	157		Sensepoint Toxic	Electrochemical	Toxic Gas Sensor; suitable for hydrogen detection with hydrogen-specific sensor	Indoor, outdoor, potentially explosive environments	0 - 1000 ppm 0 - 10000 ppm	ATEX / IECEx II 2 GD Ex d ia IIC T4 Gb tb IIIC A21 IP67 Compliance with CE standards including EN 50270 (EMC)
	158		Satellite XT	Electrochemical	Gas detection transmitter with sensor to detect toxic, corrosive and combustible gases; Hydrogen detection sensors: MST 9602-5100 (0...1.0% vol.) MST 9602-5101 (0...4.0% vol.) Manufactured by: MST Technology, München, Germany	Typical installation: gas cabinet exhaust ducting, equipment enclosures, ...	0 - 1 vol% 0 - 4 vol%	RFI / EMC: EN 550011/550022, EN 50082-2
	159		E3Point	Catalytic	Stand alone remote sensor platform; Remote hydrogen sensor E3SRMH2 includes hydrogen sensor cartridge E3H2	Gas monitoring	0 - 100 % LEL	CSA C22.2 No. 61010-1, UL 61010-1; FCC part 15; ICES-003 issue 4; ISO 9001-2008
40	160	Industrial Scientific Oakdale, PA, USA	iBrid MX6	Catalytic Electrochemical	Portable multi-gas detector, sensor selection according to target gas, hydrogen-specific sensor available P/N 17124975-C		0 - 100 % LEL (Combustible gas sensor) 0 - 2000 ppm (Hydrogen sensor)	UL, ATEX, IECEx, CSA, ANZEx, INMETRO, KOSHA, MSHA, China Ex, China CPC, GOST-R
	161		Ventis MX4	Catalytic	Portable multi-gas detector, sensor selection according to target gas, combustible gas sensor available, not hydrogen-specific, P/N 17134495	Chemical, Construction, Electrical / Gas Utilities, Fire Service, Oil and Gas, Public Works, Steel Production, Water / Waste Water Treatment Industries	0 - 100 % LEL (Combustible gas sensor)	UL, ATEX, IECEx, CSA, ANZEx, INMETRO, KOSHA, MSHA, PA-DEP, China Ex, China CMC, China MA, GOST-K, GOST-R
	162		BM 25	Catalytic Electrochemical	area monitoring, sensor selection according to target gas, hydrogen-specific sensor available P/N 6313803	Area monitoring	0 - 100 % LEL (Combustible gas sensor) 0 - 2000 ppm (Hydrogen sensor)	ATEX, IECEx, CSA
	163		GasBadge Pro		portable single gas detector, sensor selection according to target gas, hydrogen-specific sensor available P/N 17124983-C	Single gas monitoring	0 - 2000 ppm	UL/cUL, CSA, ATEX, IECEx, ANZEx, INMETRO, China Ex, KOSHA
	164		MX4 iQuad	Catalytic	Portable four-gas detector, sensor selection according to target gas, combustible gas sensor available, not hydrogen specific, P/N 17134495	Personal gas monitor	0 - 100% LEL (Combustible gas sensor)	UL, ATEX, IECEx, CSA, MSHA, China Ex, China MA, GOST-R, ANZEx KOSHA, VIET NAM
	165		ITX	Catalytic Electrochemical	Portable multi-gas monitor, sensor selection according to target gas, hydrogen-specific toxic gas sensor available P/N 17100967	Monitoring of one to six gases	0 - 100% LEL (Combustible gas sensor) 0 - 1000 ppm (Hydrogen sensor)	UL, CSA, MSHA, ATEX, Australia
41	166	INFICON Bad Ragaz, Schweiz	Sensistor-ILS500	Thermal conductivity	portable device	Leak detection		IP30

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	167		Sensistor-XRS9012	Thermal conductivity	handheld device	Leak detection		IP55
	168		Extrima	Thermal conductivity	portable device	Leak detection		Ex ia IIC T3
	169		Sensistor-ISH2000	Thermal conductivity	portable device	Leak detection	0.5 ppm H ₂ ; 5x10-7 mbarl/s or cc/s with 5% H ₂	
	170		Sensistor-Sentrac	Thermal conductivity	desktop or portable device	Leak detection	0.5 ppm H ₂ ; 5x10-7 mbarl/s	
42	171	International Gas Detectors Ltd. Stockport, UK	MK III DCP	Catalytic Pellistor	Flammable gas detector, not hydrogen-specific		0 - 100% LEL	ATEX, Exd
	172	Note: formerly known as Oliver IGD Ltd.	MK VI		Flammable gas detector, used in detector series, no specification available			
	173		Tocsin 102		Gas detector series, available sensor types include IR, EC, PID devices, type depending on detectable gas. Hydrogen sensor: P/N 5106901		0 - 200 ppm (min.) 0 - 2000 ppm (max.)	ATEX, EExd
	174		Tocsin 103		Gas detector series, available sensor types include MK III, MK VI, Type B pellistors, IR, EC devices type depending on detectable gas. Sensor for II flammable gases: P/N 5137001 (MK VI sensor) Hydrogen sensor: P/N 5224601		0 - 100 % LEL (Flammable gas sensor) 0 - 100 ppm (min.) 0 - 2000 ppm (max.) (Hydrogen sensor)	n/a
43	175	INRAG AG Birsfelden, CH	I-GRAPH XS	Thermal conductivity	Micro Gas Chromatography System; mobile	Analysis of gaseous substances, gas chromatographic monitoring; Custom application: hydrogen and oxygen measurement for hydrogen generation	n/a	n/a
	176		I-GRAPH XC	Thermal conductivity	Micro Gas Chromatography System; mobile, harsh field conditions, all-in-one device	Analysis of gaseous substances, gas chromatographic monitoring	n/a	n/a
	177		I-GRAPH XPR	Thermal conductivity	Micro Gas Chromatography System; 19" rack version, fully integrated in the control cabinet	Analysis of gaseous substances, gas chromatographic monitoring; Custom application: hydrogen and oxygen measurement in nuclear power plants	n/a	n/a
	178		I-GRAPH XPX	Thermal conductivity	Micro Gas Chromatography System; continuous plant monitoring, potentially explosive atmospheres	Analysis of gaseous substances, gas chromatographic monitoring	n/a	ATEX
	179		I-GRAPH OEM	Thermal conductivity	Micro Gas Chromatography System; box for plant integration	Analysis of gaseous substances, gas chromatographic monitoring	> 0.1 ppm	IP 44
44	180	Intelligent Optical Systems Inc. Torrance, CA, USA	Hydrogen Sensor	Optical	Hydrogen Gas Leak Detector in Air, hand-held or wall-mount Prototype	Hydrogen Fuel Cells Storage Facilities and Tanks Vehicles	100 ppm - 10 %	n/a

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45	181	J. Dittrich Elektronik GmbH & Co. KG Baden-Baden, Germany	MF420-P	Catalytic Pellistor	Gas measurement system for explosible gases and vapors; target gases: hydrogen, etc.	Analysis of gases and vapors	0 - 100 % LEL	n/a
	182		MF420-H	Resistive Semiconductor, metal oxide based (SnO ₂), on substrate	Gas measurement system for explosible gases and vapors; target gases: hydrogen, etc.	Analysis of gases and vapors	0 - 50 % LEL	n/a
	183		MF420-C-H2	Electrochemical Solid state electrolyte	Hydrogen-specific gas measurement system	Hydrogen analysis	0.01 - 4 vol%	n/a
46	184	Kebaili Corp. Irvine, CA, USA	KHS-100	Resistive Silicon-based MEMS-sensor	Hydrogen gas sensor element, 0-100% LEL		0 - 100 % LEL	n/a
	185		KHS-200	Catalytic MEMS-based micro pellistor	Hydrogen gas sensor element, 0-100% LEL; sensor on Kebaili KHS-EVAL evaluation boards		0 - 100 % LEL	n/a
	186		KHS-EVAL-L-LEL	Catalytic	Evaluation board based on KHS-200 hydrogen sensor element		0 - 100 % LEL (0 - 40000 ppm)	n/a
	187		KHS-EVAL-L-PPM	Catalytic	Evaluation board based on KHS-200 hydrogen sensor element		0 - 10 % LEL (0 - 4000 ppm)	n/a
	188		KHS-EVAL-S-LEL	Catalytic	Evaluation board based on KHS-200 hydrogen sensor element		0 - 100 % LEL (0 - 40000 ppm)	n/a
47	189	Komyo Rikagaku Kogyo K. K. Kawasaki, Japan	RD-4	Catalytic	Hydrogen gas detector head; more detector heads for combustible gases are available	For use in Fixed Type Gas Detector Alarm Systems (e.g. FA-480, FA-490)		n/a
	190		FA-480 / FA-490	Catalytic Hot wire semiconductor	Gas detector alarm units for single point monitoring, different versions available: Detection of hydrogen in air, etc.	Single point gas leak detection	0 - 2000 ppm	n/a
	191		KTS-526	Electrochemical amperometric	Hydrogen gas sensor element, more sensors for combustible gases using different technologies (catalytic combustion, hot wire semiconductor) are available		0 - 4 vol%	n/a
	192		137U	Optical Color change	KITAGAWA gas detector tube system, hydrogen gas detector tub, color change of chemical reagent in detector tube		0.05 - 0.8 %	n/a
48	193	KWJ Engineering Inc. Newark, CA, USA	A285		Four Gas Analyzer: H ₂ , CO, CO ₂ , O ₂ ; Portable monitor for spot measurement; Custom solution for KWJ customer	Bio gas analysis, Custom solution for KWJ Customer	n/a	n/a
	194		A355		Transformer tester, portable monitor for spot measurement; detection of combustible gases; Modification of RKI Model GP-204,	Oil-filled high-powered electrical transformers	n/a	n/a

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	195		626 Pipeline Special	(MOX)	Gas leak detector, dual sensor H ₂ and CH ₄ ; Portable monitor for spot measurement	Gas pipeline leak surveys, above and below ground	0 - 10000 ppm	n/a
	196		634 Pro Surveyor	(MOX)	Gas leak detector, dual sensor H ₂ and CH ₄ ; Portable monitor for spot measurement	Gas pipeline leak surveys, above and below ground	0 - 10000 ppm	n/a
	197		555	(MOX)	Hydrogen leak detector, Dual sensor hydrogen gas leak detector; Portable monitor for spot measurement	Hydrogen leak surveys in conventional and nuclear power plants	n/a	n/a
49	198	Kyushu University, Kato-Lab / Orii&Mec Corporation Fukuoka, Japan	H2 Sensor	Acoustic Ultrasonic	Single product directly from university lab	Portable, installation and large area multipoint	100 ppm - 100 %	n/a
50	199	LAMTEC GmbH & Co KG Walldorf, Germany	CarboSen	Electrochemical Solid state electrolyte	Detection of flammable gases, CO, H ₂ , etc.		n/a	n/a
	200		HydroSen	Electrochemical Solid state electrolyte	Detection of hydrogen; Note: identical product is offered by Escube GmbH & Co. KG	Leakage and safety monitoring particularly of fuel cells and electrolysis equipment	0 - 1000 ppm, 0 - 10000 ppm (max. 50 % LEL)	n/a
51	201	LFE GmbH & Co. KG Bruchköbel, Germany	CONTHOS 3	Thermal conductivity	Hydrogen gas analyzer	industrial processes;	Lowest: 0 - 0.5 % H ₂ in N ₂ or 99.5 - 100 % H ₂ in N ₂ Largest: 0 - 100 % H ₂	n/a
52	202	Makel Engineering, Inc. Chico, CA, USA	"Smart Hydrogen Sensors"	(MEMS-based, thin-film microsensor)	Hydrogen microsensor, MEMS-based device; no datasheets or specifications for sensors available, just text.	Fuel cell safety, Facility monitoring, Assembly leak checking, Industrial gas detection, Chemical process monitoring; Also, space applications and missions, Ford Model U Hydrogen Prototype are mentioned on website.	n/a	n/a
53	203	Materion GmbH Wismar, Germany	MOHS 2.1	Optical	Modular hydrogen gas sensor; change in thin film properties	Room air monitoring, process control, control of industrial applications	0.1 - 4 vol%	n/a
	204		MOHS 2.2	Optical	Modular Hydrogen gas sensor; change in thin film properties	Room air monitoring, process control, control of industrial applications	0.1 - 4 vol%	n/a
	205		MOHS 3	Optical	Modular hydrogen gas sensor; change in thin film properties	Room air monitoring, process control, control of industrial applications	0.1 - 100 vol%	n/a
	206		MOHS 3.2	Optical	Modular hydrogen gas sensor; change in thin film properties	Room air monitoring, process control, control of industrial applications	0.1 - 100 vol%	n/a
	207		MOHS 4	Optical	Modular hydrogen gas sensor; change in thin film properties	Room air monitoring, process control, control of industrial applications	0.1 - 100 vol%	n/a
54	208	Membrapor Wallisellen, CH	H2/M-1000	Electrochemical	Hydrogen gas sensor element; miniature size	Safety and Environmental Control For Portable Gas Detectors	0 - 1000 ppm	n/a
	209		H2/M-4000	Electrochemical	Hydrogen gas sensor element; miniature size	Safety and Environmental Control For Portable Gas Detectors	0 - 4000 ppm	n/a

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	210		H2/CA-1000	Electrochemical	Hydrogen gas sensor element; compact size H ₂ Detection in H ₂ /CO-Mixtures	Medical Applications Safety and Environmental Control	0 - 1000 ppm	n/a
	211		H2/CB-1000	Electrochemical	Hydrogen gas sensor element; compact size H ₂ Detection in H ₂ /CO-Mixtures	Medical Applications Safety and Environmental Control	0 - 1000 ppm	n/a
	212		H2/C-2000	Electrochemical	Hydrogen gas sensor element; compact size	Safety and Environmental Control	0 - 2000 ppm	n/a
	213		H2/C-5000	Electrochemical	Hydrogen gas sensor element; compact size	Safety and Environmental Control	0 - 5000 ppm	n/a
	214		H2/C-20000	Electrochemical	Hydrogen gas sensor element; compact size	Safety and Environmental Control	0 - 20000 ppm	n/a
	215		H2/CT-40000	Electrochemical	Hydrogen gas sensor element; compact size	Safety and Environmental Control	0 - 40000 ppm	n/a
	216		H2/SA-1000	Electrochemical	Hydrogen gas sensor element; compact size H ₂ Detection in H ₂ /CO-Mixtures	Safety and Environmental Control	0 - 1000 ppm	n/a
	217		H2/S-2000	Electrochemical	Hydrogen gas sensor element; standard size	Safety and Environmental Control	0 - 2000 ppm	n/a
	218		H2/SA-1000-S	Electrochemical	Hydrogen gas sensor element; slim size H ₂ Detection in H ₂ /CO-Mixtures	Medical Applications Safety and Environmental Control	0 - 1000 ppm	n/a
	219		H2/S-2000-S	Electrochemical	Hydrogen gas sensor element; slim size	Safety and Environmental Control	0 - 2000 ppm	n/a
	220		H2/S-10000-S	Electrochemical	Hydrogen gas sensor element; slim size	Safety and Process Control	0 - 10000 ppm	n/a
55	221	MESA Electronic GmbH Geretsried-Gelting, Germany	MEGAS 2.0	Thermal conductivity	micro-thermal conductivity sensor on Si-base	Analysis of gas atmospheres	0 - 80 vol%	n/a
56	222	Micronas GmbH Freiburg, Germany	GAS 8616B	Work function Capacity-coupled field effect transistor / MOSFET	Multi-parametric sensor platform, target gas H ₂ + NO ₂ , two independent gas sensor units	Detection of concentration changes of ambient trace gases, trace gas / gas leakage detection	100 ppb - 1 vol% gas concentration approx.	n/a
57	223	Microsens S.A. Neuchâtel, CH	MCGS	Catalytic	Datasheet available only for MCGS-2102 methane gas sensor (CH ₄); Measurement of the temperature change induced by exothermic reaction with combustible gases.	Security (explosive gases, solvents), industrial process monitoring	0 - 100 % LEL	n/a
	224		MSGS 3000	Resistive Semiconducting metal oxide layer	Monosensor; semiconductor surface conductivity modification with reducing or oxidizing gas interaction; sensitive layer: SnO ₂ - Nb ₂ O ₅ , doped and undoped	Security (explosive gases, solvents), industrial process monitoring, indoor air quality, combustion control, environment, exhaust gases	1 - 10000 ppm	n/a
	225		MSGS 4000	Resistive Semiconducting metal oxide layer	Multisensor (4-sensor array & 6-sensor array) semiconductor surface conductivity modification with reducing or oxidizing gas	Security (explosive gases, solvents), industrial process monitoring, indoor air quality, combustion control, environment, exhaust gases	1 - 10000 ppm	n/a
	226		MGSM 3000	Resistive Semiconducting metal oxide layer	Gas sensing module with two MSGS 3000 gas sensors	Pre-calibrated module for portable systems, Indoor air monitoring, Environment monitoring, Security, industrial process control	1 - 10000 ppm	n/a

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58	227	Monicon Technology Ltd. Galway, Ireland	T100	Electrochemical	Toxic Gas Detector, 3 electrode / micro fuel cell technology Electrode material is designed specifically for the gas to be sensed (catalysed reactions), target gases: H ₂ , etc.		500 ppm (min.) 4 % (max.)	ATEX EMC Compliance: EN 50081, EN 50082
	228		CGS500	Catalytic	Combustible Gas Detector; active & reference thermocatalytic element	Combustible gas concentration measurements	0 - 100 % LEL	ATEX EMC Compliance: EN 50081, EN 50082
59	229	MSA Cranberry Township, PA, USA MSA Auer GmbH Berlin, Germany	ULTIMA® XE Hydrogen	Electrochemical	Gas Monitor; electrochemical principle for hydrogen specific sensor, 0-1000 ppm	Continuous detection and monitoring of combustible gases, industrial environment Hydrogen monitoring in Data Centers, Refineries, Chemical/Petrochemical	0 - 1000 ppm	ATEX, EMC, Low Voltage Directives Performance approval: EN 60079-29-1:2007, EN 50104:2002 EN 50271:2002
	230		ULTIMA® XE Combustible gas	Catalytic	Gas Monitor; catalytic bead principle for general combustible gas sensor, including hydrogen, 0-100% LEL	Continuous detection and monitoring of combustible gases, industrial environment Hydrogen monitoring in Data Centers, Refineries, Chemical/Petrochemical	0 - 100 % LEL	ATEX, EMC, Low Voltage Directives Performance approval: EN 60079-29-1:2007, EN 50104:2002 EN 50271:2002
	231		TRIGARD®	Catalytic	Gas Monitoring System	Detection of combustible gases, including hydrogen	n/a	n/a
	232		GasGard® XL		Controller/Monitor for up to eight remote gas sensors	Combustible, Oxygen, Toxic Detection	n/a	UL/CSA, CE, FTZU, CMC, GOST, cCSAus ATEX, EMC (EN 50270), Low Voltage (EN 61010-1) Directives EN 61779-1 / -4; EN 50402
	233		Ultrasonic IS-5 / EX	Acoustic Ultrasound	cf. General Monitors product, seems identical	Gas leak detection; gas pipelines, hydrogen storage	25 kHz to 70 kHz (Frequency range) 58 dB to 104 dB (Ultrasonic dynamic range)	FM, CSA, ATEX, IECEx, GOST-R, SIL 3 suitable
60	234	MST Intertrade GmbH München, Germany	SECS H2 20000	Electrochemical	Hydrogen sensor, three-electrode, amperometric, 20000 ppm, 2% vol.	Hydrogen detection	0 - 20000 ppm	n/a
	235		Hydrogen-H2-2E-5%	Electrochemical	Hydrogen sensor, two-electrode, amperometric; 5% vol. H ₂ in air or N ₂	Hydrogen detection	0 - 5 vol% in air or N ₂	n/a
	236		H2 Sensor 4 Se 6-24	Electrochemical	Hydrogen sensor, three-electrode, amperometric; 20000 ppm, 2% vol.	Hydrogen detection	0 - 20000 ppm	n/a
61	237	Nano Environmental Technology (N.E.T.) S.r.l. Cornaredo, Italy	NP-17SMM	Catalytic	Flammable gas sensor element, not hydrogen-specific;	Flammable gas detection	0 - 100 % LEL	n/a
	238		NP-17SM	Catalytic Pellistor	Flammable gas sensor element, not hydrogen-specific; matched pair of pellistor elements mounted on single header	Flammable gas detection	0 - 100 % LEL	n/a
	239		NP-17SHM NP-17SHP	Catalytic	Flammable gas sensor element, not hydrogen-specific; Single header, metal or plastic housing	Flammable gas detection	0 - 100 % LEL (linear to 60 % LEL)	n/a

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	240		NP-18SMM	Catalytic	Flammable gas sensor element, not hydrogen-specific;	Flammable gas detection	0 - 100 % LEL	n/a
	241		NP-18SHM NP-18SHP	Catalytic	Flammable gas sensor element, not hydrogen-specific; Single header, metal or plastic housing	Flammable gas detection	0 - 100 % LEL (linear to 60 % LEL)	n/a
	242		NP-30SMM	Catalytic	Flammable gas sensor element, not hydrogen-specific;	Flammable gas detection	0 - 100 % LEL	n/a
	243		NP-30SHM NP-30SHP	Catalytic	Flammable gas sensor element, not hydrogen-specific, Single header, metal or plastic housing	Flammable gas detection	0 - 100 % LEL	n/a
	244		NP-21TSMM	Catalytic	Flammable gas sensor element, not hydrogen-specific;	Flammable gas detection	0 - 100 % LEL	n/a
	245		NT-H2-SR	Electrochemical Solid state electrolyte	Hydrogen sensor for gas detection	Hydrogen, car park, building, residential	0 - 50 % LEL	n/a
	246		NT-H2-SF	Electrochemical Solid state electrolyte	Hydrogen sensor for gas detection	Hydrogen, car park, building, residential	0 - 50 % LEL	n/a
	247		Genius	Two sensor elements: Optical IR & Catalytic	Dual Tech Sensor Family, detection of two gases, composed of NDIR sensor (IRNET-P-20) and hydrogen pellistor for H ₂ %LEL detection	Hydrocarbon and hydrogen detection 0-100% LEL	0 - 100 % LEL (hydrogen)	n/a
62	248	NAST co. Nagoya, Japan	THS-100	Thermal conductivity (Thermoelectric)	Hydrogen sensor for gas detection	Gas Concentration Monitoring system	1 ppm - 4 vol% in air	
63	249	NEMOTO Sensor Engineering Co. Ltd. Tokyo, Japan	NC-170 (NCP-170)	Catalytic (Pellistor)	General combustible gas sensor element matched pair type	Industrial sensor	Less than 100 % LEL	n/a
	250		NC-170S (NCP-170S)	Catalytic (Pellistor)	General combustible gas sensor element single header type	Industrial sensor	Less than 100 % LEL	n/a
	251		NC-300 (NCP-300)	Catalytic (Pellistor)	General combustible gas sensor element matched pair type	Industrial sensor	Less than 100 % LEL	n/a
	252		NC-300S (NCP-300S)	Catalytic (Pellistor)	General combustible gas sensor element single header type	Industrial sensor	Less than 100 % LEL	n/a
	253		NC-180 (NCP-180)	Catalytic (Pellistor)	General combustible gas sensor element matched pair type	Industrial sensor	Less than 100 % LEL	n/a
	254		NC-180S-H (NCP-180S-H)	Catalytic (Pellistor)	hydrogen-specific sensor element single header type	Industrial sensor	Less than 100 % LEL	n/a
	255		NC-180-H (NCP-180-H)	Catalytic (Pellistor)	hydrogen-specific sensor element matched pair type	Industrial sensor	Less than 100 % LEL	n/a
	256		NC-50S (NCP-50S)	Catalytic (Pellistor)	General combustible gas sensor element single header type	Industrial sensor	Less than 100 % LEL	n/a
	257		NC-70S (NCP-70S)	Catalytic (Pellistor)	General combustible gas sensor element single header type	Industrial sensor	Less than 100 % LEL	n/a
	258		NAP-2A	Catalytic	General combustible gases; universal type	Residential sensor; Gas detectors, gas densitometers	Hydrogen: 0.05 - 4 %, 0.05 - 1.5 % (high accuracy)	n/a

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	259		NAP-55A	Catalytic	General combustible gases; small sized, lower power consumption	Residential sensor; Gas detectors, leak testers	Hydrogen: 0.05 - 4 %, 0.05 - 1.5 % (high accuracy)	n/a
	260		NAP-56A	Catalytic	General combustible gases; small sized, lower power consumption	Residential sensor	Hydrogen: 0.05 - 4 %, 0.05 - 1.5 % (high accuracy)	n/a
	261		NAP-50A	Catalytic	General combustible gases; low sensitivity to ethanol	Residential sensor; Gas detectors	Hydrogen: 0.05 - 4 %, 0.05 - 1.5 % (high accuracy)	n/a
	262		NAP-50AF	Catalytic	General combustible gases; with charcoal filter	Residential sensor	Hydrogen: 0.05 - 4 %, 0.05 - 1.5 % (high accuracy)	n/a
	263		NAP-3A	Catalytic	LPG, hydrogen, and organic solvent vapor; universal type	Residential sensor; LP Gas detectors, leakage tester, gas denistometers	Hydrogen: 0.05 - 4 %, 0.05 - 1.5 % (high accuracy)	n/a
	264		NAP-66A	Catalytic	LPG, hydrogen, and organic solvent vapor; small sized, lower power consumption	Residential sensor; Gas detectors, leak testers	Hydrogen: 0.05 - 4 %, 0.05 - 1.5 % (high accuracy)	n/a
	265		NAP-67A	Catalytic	LPG, hydrogen, and organic solvent vapor; small sized, lower power consumption	Residential sensor	Hydrogen: 0.05 - 4 %, 0.05 - 1.5 % (high accuracy)	n/a
	266		NAP-100AM	Catalytic	Target: Flammable/combustible gases for commercial use; high performance	Industrial	1 - 50 % LEL	n/a
	267		NAP-100AC	Catalytic	Target: Flammable/combustible gases for commercial use; high performance	Industrial	3 - 100 % LEL	n/a
	268		NAP-100AD	Catalytic	Target: Flammable/combustible gases for commercial use; high performance	Industrial	1 - 50 % LEL	n/a
	269		NAP-100AH	Catalytic	Target: Hydrogen, CO; commercial use, high performance	Industrial	1 - 50 % LEL (Hydrogen)	n/a
	270		NSU-131A	Catalytic	General combustible gases, hydrogen	Residential sensor, for hydrogen fuel cell, pre-set alarm calibration	Calibrated Alarm Concentration: 3600 - 4000 ppm Calibration Range: 5 - 25 % LEL (Hydrogen)	n/a
	271		NSU-131AF	Catalytic	General combustible gases, hydrogen	Residential sensor, for hydrogen fuel cell, pre-set alarm calibration	Calibrated Alarm Concentration: 3600 - 4000 ppm Calibration Range: 5 - 25 % LEL (Hydrogen)	n/a
64	272	Neodym Systems Inc. Vancouver, Canada	HydroKnowz®	Catalytic	Hydrogen gas monitor	Power generation equipment	0 - 25000 ppm	n/a
	273		ProtiSen®	Catalytic	Hydrogen gas sensor module	Power generation equipment	0 - 40000 ppm	n/a
	274		PowerKnowz®	(Metal Oxide Semiconductor / MOS Tin dioxide)	Combustible gas detector, Hydrogen-specific option: Model PK-GH	Specifically designed for safety applications in fuel cells and gas-burning power generators	0 - 20000 ppm	n/a

The "H2Sense Hydrogen Sensor Database"

No. M	No. S	Manufacturer City, Country	Sensor Model	Technology	Description / Remark	Application	Detection Range (H ₂)	Certificates / Approvals / Tests / Classification
	275		MiniKnowz®	(Metal Oxide Semiconductor / MOS Tin dioxide)	Combustible gas sensor module, Hydrogen-specific option: Model MN-GH	Specifically designed for safety applications in fuel cells and gas-burning power generators	0 - 20000 ppm	n/a
65	276	Net Safety Monitoring Inc. Calgary, Canada	SC310	Catalytic	Combustible gas detector, hydrogen detection range is given in data sheet; For control and communication: Millenium II fixed gas detection transmitters in single / basic single channel, dual channel versions	Combustible gas detection	0 - 100% LEL	US/CDN: Class I, Div. 1, Groups B, C, D; Class I, Zone 1, Group IIB + H ₂ , Type 4X, IP64 FM 6310/6320, ANSI/ISA 12.13.01, CSA-C22.2 No152 ATEX - II 2 G Exd IIB + H ₂ T5 IP64 IEC 61779-1, IEC 61779-4 IECEX (pending) INMETRO - Ex d IIB + H ₂ T4 Gb IP66/67 GOST-R
66	277	New Cosmos Electric Co. Ltd. Osaka, Japan	-	(Hot wire semiconductor)	Target gas: Combustible / Toxic Sampling method: Diffusion type; Also distributed by Bionics Instrument	Gas detector head, industrial use	n/a	n/a
	278		KD-12B	Catalytic	Target gas: Combustible / Toxic Sampling method: Diffusion type; Also distributed by Bionics Instrument	Gas detector head, industrial use	n/a	n/a
	279		KD-12C	Thermal conductivity	Target gas: Hydrogen, Helium, CO ₂ Sampling method: Diffusion type; Also distributed by Bionics Instrument	Gas detector head, industrial use	n/a	n/a
	280		XP-3110	Catalytic	Portable detector; Target: Combustible gases and vapors, gas to be detected must be specified	Monitoring a risk of explosion	0 - 100 % LEL	Ex ibd II BT3
	281		XP-3118	Catalytic	Portable detector; Target: simultaneous detection of combustible gas and oxygen concentration, gas to be detected must be specified	Compliance work, safety and environmental monitoring	0 - 100 % LEL	Ex ibd II BT3
	282		XP-3140	Thermal conductivity	Combustible gas detectors; portable; gas to be detected has to be specified	Inspecting the amount of gas remaining in tanks	0 - 100 vol%	Ex ibd II BT3
	283		XP-3160	Catalytic	Portable detector; Target: Combustible gases and vapors, gas to be detected must be specified	Measuring toxic and combustible gases in the ppm range	0 - 5000 ppm 0 - 10000 ppm	Ex ibd II BT3
	284		XP-702 II Z	(Hot wire semiconductor)	Combustible gas leak detector; allows simultaneous detection of two types of gas	Detecting small gas leaks, detection of one or two types of gas simultaneously	10 ppm (min.)	n/a
	285		XP-703 D	(Hot wire semiconductor)	Portable detector; Target gases: semiconductor manufacturing gases including hydrogen Also distributed by Bionics Instrument	Gas leak and trace detection in semiconductor manufacturing	1.0 ppm (min.)	n/a
67	286	Nolek Norsborg, Sweden	SniffIT X1	(Novel patented SniffIT technology®)	Helium and hydrogen leak detector, hand-held	Leak test in various application areas	n/a	n/a

The "H2Sense Hydrogen Sensor Database"

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68	287	Nova Analytical Systems Niagara Falls, NY, USA	335 Series	Thermal conductivity	Portable Process Hydrogen Analyzer	Analysis of hydrogen in a binary gas mixture in process gases such as H ₂ in air, H ₂ in N ₂ , H ₂ in CO ₂ , H ₂ in Ar, H ₂ in O ₂ , etc.	0 - 100 % H ₂ in a binary gas mixture	n/a
	288		340 Series	Thermal conductivity	Portable Analyzer for Oxygen and Hydrogen; Oxygen detection: electrochemical sensor	Analysis of O ₂ /H ₂ in exothermic furnace atmospheres for copper, brass, or steel annealing, neutral heating, sintering, glass metal beds, or oxide coating of steel.	0 - 25 % O ₂ , 0 - 40 % H ₂ (Model 340) 0 - 2 % and 0 - 25 % O ₂ , 0 - 40 % H ₂ (Model 340) 0 - 100 to 0 - 9999 ppm O ₂ , 0 - 40 % H ₂ (Model 340L)	n/a
	289		380 Series	Thermal conductivity	Portable Tri-gas Analyzer, Hydrogen Purity Analyzer	Gas analyzer for power generators: Analysis of atmosphere inside hydrogen-cooled power generator during purity and purge modes.	0 - 100 % H ₂ in Air 0 - 100 % H ₂ in CO ₂	n/a
	290		430 Series	Thermal conductivity	Process Hydrogen Analyzer	Continuous analysis of up to 100% hydrogen in process gas streams. Also recommended for: H ₂ cooled generators, electrolysis units, refinery gas, heat treating atmospheres, etc.	Any between 0 - 2 % and 0 - 100 % H ₂	Class 1, Div. 1, Groups A, B, C, D Hazardous Area Rating (Models 430N7MC & 430PMN7) Class 1, Div. 2, Hazardous Area Rating (Model 430D2)
	291		436 Series	Thermal conductivity	Continuous tri-gas purity and purging monitor of hydrogen cooled power generators	Power generation industry	0 - 100 % H ₂ in Air 0 - 100 % H ₂ in CO ₂	Class 1, Div. 1, Groups A, B, C, D Hazardous Area Rating (Models 436N7MC & 436PMN7) Class 1, Div. 2, Hazardous Area Rating (Model 436D2)
	292		870 Series	Thermal conductivity	Continuous gas analyzer; Analysis of any combination of CH ₄ , CO ₂ , CO, H ₂ , O ₂ . O ₂ : electrochemical detection CO, CO ₂ , CH ₄ : NDIR infrared detector	Steel-making and metals industries; Monitoring of atmospheres associated with steel-making and metal working or other industrial processes.	0 - 5 %, 0 - 50 %, 0 - 100 % H ₂	n/a
	293		970 Series	Thermal conductivity	Syngas / gasification analyzer; Analysis of any combination of CH ₄ , CO ₂ , CO, H ₂ , O ₂ . O ₂ : paramagnetic detection, CO, CO ₂ , CH ₄ : NDIR infrared detector	Continuous monitoring of syngas and gasification atmospheres or other industrial processes.	0 - 5 %, 0 - 50 %, 0 - 100 % H ₂	n/a
	294		7200-5	Catalytic	Continuous flue gas analyzer, combination of analyzed gases includes combustible gases, e.g. H ₂	Continuous analysis of flue gas for different combinations and ranges of gases including combustible gases	0 - 2 %, 0 - 5 %, 0 - 10 % Combustibles	n/a
	295		7900P Series	Thermal conductivity	Portable industrial analyzers; Analysis of any combination of CO, CO ₂ , CH ₄ , H ₂ , O ₂ . O ₂ : electrochemical detection, CO, CO ₂ , CH ₄ : infrared detector	Monitoring heat treating atmosphere or process gases.	0 - 2 %, 0 - 50 % H ₂	n/a
	296		7900 Series	Thermal conductivity	Single and multi-gas industrial process gas analyzer; Continuous monitoring of any combination of gases such as O ₂ , CH ₄ , CO ₂ , CO, H ₂ . O ₂ : electrochemical detection, CO, CO ₂ , CH ₄ : NDIR infrared detector	Industrial processes including heat treating atmospheres	0 - 2 %, 0 - 50 % H ₂	n/a

The "H2Sense Hydrogen Sensor Database"

No. M	No. S	Manufacturer City, Country	Sensor Model	Technology	Description / Remark	Application	Detection Range (H ₂)	Certificates / Approvals / Tests / Classification
69	297	NTM Sensors Lewis Center, OH, USA	NTM SenseH2®	Other/New Chemi-resistive ceramic	patent-pending technology; Alarm box and calibration kit available	Hydrogen fuelled back-up power systems, battery based UPS or cabinet system monitoring, hydrogen refuelling stations and hydrogen generation (electrolyzer) systems, fuel cell power devices including forklift trucks, any hydrogen monitoring requiring high sensitivity and quick response	0.25 - 4 % (in air)	UL, ATEX, CE (hazardous locations)
70	298	ODB-Tec GmbH & Co. KG Neuss, Germany	ODB-Schottky-Diode Hydrogen Sensor	Work function Schottky Diode	Might be still under development. Public funding and cooperation with university is highlighted.	Fuel cell / automotive low-cost consumer product	n/a	n/a
71	299	Oldham Arras, France Industrial Scientific Pittsburgh, PA, USA	CTX 300	Electrochemical	Fixed Gas Detector, allows for hydrogen-specific sensor	Detection of toxic gases or lack of oxygen	2000 ppm (Model WC3 H2A / Hydrogen) 2 % (Model WC3 H2B / Hydrogen)	US/CDN: CSA EMC: EN 50270:06
	300		iTrans	Electrochemical	Fixed-point Monitor, allows for hydrogen-specific sensor		0 - 999 ppm (Hydrogen)	NRTL/c & CSA, ATEX (pending), IEC (pending), China
	301		iTrans 2	Electrochemical	Fixed Gas Detector, allows for hydrogen-specific sensor, detection and display of up to two gases	Oil and Gas Industry, Offshore Drilling, Utilities and Power, Petrochemical Industry, Municipal Water and Waste Treatment, Food and Beverage Production	0 - 999 ppm (Hydrogen)	NRTL/c & CSA, ATEX (pending), IEC (pending), China
	302		OLC 10	Catalytic Pellistor	Combustible/flammable gas and vapor monitor/transmitter; OLCT 10 version for toxic gases available	Designed for the use in boiler rooms and parking garages	0 - 100 % LEL	EMC: EN 50270 ATEX Approved
	303		OLC 20	Electrochemical Thermal conductivity Catharometer	Detector/transmitter for fixed gas detection with choice of two different hydrogen-specific sensors; general flammable gas catalytic sensor also available	Designed for indoor or outdoor facility monitoring	2000 ppm (electrochemical) 0 - 100 vol% (catharometer)	EMC: EN 50270 ATEX Certified
	304		OLC 50	Electrochemical Thermal conductivity Catharometer	Detector/transmitter for fixed gas detection with choice of two different hydrogen-specific sensors; general flammable gas catalytic sensor also available	Designed for manufacturers, refineries and other industries	2000 ppm (electrochemical) 0 - 100 vol% (catharometer)	EMC: EN 50270 ATEX Certified
	305		OLCT 60	Electrochemical	Detector/transmitter for fixed gas detection, hydrogen-specific sensor; general explosive gas catalytic sensor also available	Gas detection	2000 ppm	ATEX SIL 2 (EN 50271) EMC (EN 50270)
	306		OLCT 80	Electrochemical Thermal conductivity Catharometre	Detector/transmitter for fixed gas detection with choice of two different hydrogen-specific sensors; general flammable gas catalytic sensor also available	Gas detection	2000 ppm (electrochemical) 0 - 100 vol% (catharometer)	EN 50054, EN 45544, EN 50104 EN 50270, EN 60529, EN 51271

The "H2Sense Hydrogen Sensor Database"

No. M	No. S	Manufacturer City, Country	Sensor Model	Technology	Description / Remark	Application	Detection Range (H ₂)	Certificates / Approvals / Tests / Classification
	307		OLCT 100	Electrochemical	Detector/transmitter for fixed gas detection, hydrogen-specific sensor; general explosive gas catalytic sensor also available	Steel mills, Petrochemical facilities, Chemical industry, Pharmaceutical industry, Food industry, Refrigeration industry, Water treatment	2000 ppm	ATEX, IECEx SIL 2 (EN 50402 / EN 61508) EN IEC 60079-29-1 (Metrological performance) EN 50270 (EMC)
72	308	Pronova GmbH Berlin, Germany	MGA45	Electrochemical	MonoGas® Analyzer with EC-Module: Detection of H ₂ and other gases	Emission monitoring, leakage monitoring; portable and fixed	50, 100, 300 ppm	n/a
	309		MGA22	Thermal conductivity	MonoGas® Analyzer with WLD-Module: Detection of H ₂ in N ₂ or air, other gases in N ₂ or air	Leakage monitoring, petrochemical, monitoring of H ₂ -containing gas mixtures; portable and fixed	1, 5, 10, 20, 30, 50, 80, 100 vol% H ₂ in N ₂	n/a
	310		ACS Sensor	Electrochemical	Gas sensor including electronics, various gases, including hydrogen	Gas detection, various gases	0 - 200 ppm (min.) 0 - 500 ppm (max.)	n/a
73	311	RAE Systems Inc. San Jose, CA, USA	RAEGuard LEL	Catalytic	Fixed combustible gas transmitter; hydrogen not explicitly mentioned in data sheet (product search result)	Industries: refineries, oil production, chemical plants, industrial safety, power plants, steel mills	0 - 100 % LEL (combustible gas)	UL Class I, Div. 1, Groups B, C, D T6
	312		ToxiRAE Pro LEL	Catalytic	Personal wireless monitor for combustible gases and vapors, hydrogen not explicitly mentioned in data sheet (product search result)	construction, foundries, oil and gas, ...	0 - 100 % LEL (combustible gas)	CSA, ATEX, IECEx, China Ex; CE Compliance: EMC 2004/108/EC, R&TTE 1999/5/EC, ATEX 94/9/EC; Performance Test Compliance: C22.2 No. 152, ANSI/ISA-12.13.01
74	313	Riken Keiki Co. Ltd. Tokyo, Japan	GX-2003	Catalytic	Personal four gas monitor; combustible gas detection, not hydrogen specific	Gas detection & monitoring	0 - 100 % LEL	CSA (CDN/US)
	314		GX-2009	Catalytic	Personal four gas monitor; combustible gas detection, not hydrogen specific	Confined spaces, Refineries/Petrochemical, Waste water treatment, Utilities, Chemical plants, Hazardous materials, Fire services, Mining, Pharmaceuticals	0 - 100 % LEL	ATEX, IECEx, CSA, CE, JML
	315		GX-2012	Catalytic	Personal four gas monitor; combustible gas detection, not hydrogen specific	Personal monitoring, Confined spaces, Refineries/Petrochemical, Waste water treatment, Utilities, Chemical plants, Hazardous materials, Fire services, Mining	0 - 100 % LEL	ATEX, IECEx, TIIS, CE
	316		GX-8000 LEL	Catalytic	Portable single gas monitor; combustible gas detection in air, H ₂ detection in air	Single gas monitoring	0 - 100 % LEL (hydrogen in air)	IECEx, ATEX, TIIS, MED, HK, CE Compliance with IEC 60079-29-1
	317		GX-8000	Catalytic Thermal conductivity	Portable multi gas monitor general combustible gases including H ₂	Confined spaces, Refineries/Petrochemical, Waste water treatment, Utilities, Chemical plants, Hazardous materials, Fire services, Mining, Pharmaceuticals, Fuel Cell Facilities	0 - 100 % LEL (catalytic) 0 - 100 vol% (TC)	IECEx, ATEX, TIIS, MED, HK, CE Compliance with IEC 60079-29-1
	318		GD-A8 series	Catalytic	Gas detector head, fixed gas detector; hydrogen in air, etc.	Various industries, oil and gas, petrochemical, ships, iron steel, automobile, etc.	0 - 100 % LEL	TIIS, CE, NK, KR, CCS, GOST, CEC, KIMM Exd II C T4 CE approved
	319		GD-D8 series	Catalytic	Gas detector head, fixed gas detector; general combustible gases in air	Various industries, oil and gas, petrochemical, ships, iron steel, automobile, etc.	0 - 100 % LEL	TIIS, CE, NK, GOST d2G4 / Exd II B T6 CE approved
	320		GD-V77D	(Semiconductor cell)	Fixed gas detector Combustible gases & Hydrogen	Semiconductor processing gases	0 - 2000 ppm (Hydrogen)	CE

The "H2Sense Hydrogen Sensor Database"

No. M	No. S	Manufacturer City, Country	Sensor Model	Technology	Description / Remark	Application	Detection Range (H ₂)	Certificates / Approvals / Tests / Classification
	321		SD-1 GP	Catalytic	Smart transmitter / gas detector; fixed gas detector; combustible gases, H ₂ , etc.	Measuring gas: Combustible gas in the presence of hydrogen Petroleum refining plant	0 - 100 % LEL	ATEX, TIIS, CE Exd II C T5
	322		FI-21	Optical Interferometric	Optical gas indicator, portable, single gas, gas purity: H ₂ in air, etc.	Gas purity measurement	0 - 100 vol% (Hydrogen in Air, N ₂ , CO ₂)	n/a
	323		FI-800	Optical Interferometric	Gas analyzer, fixed gas detector, combustible gases and vapours, H ₂ , etc.	Gas concentration in drying facilities, purity control of several gases, etc.	0 - 100 vol% (Hydrogen)	Exd II B + H2 T4 TIIS, GOST, KOSHA
	324		GP-01	Catalytic	Personal combustible gas monitor, combustible gas in air	Hazardous material, Refineries/Petrochemical, Utilities, Mining, Water/Waste water treatment, Chemical Plants, Pharmaceuticals, Fire services	0 - 100 % LEL	CSA, ATEX, JML
	325		GP-88A	Catalytic	Portable combustible single gas monitor, general combustible gas; dual range	Gas detection & monitoring	0 - 10 % LEL (low) 0 - 100 % LEL (high)	TIIS Ex iad II B T3
	326		GP-88AS	Catalytic	Portable combustible single gas monitor, general combustible gas, toxic gas & solvent, including hydrogen; dual range	Gas detection & monitoring	0 - 500 ppm (low) 0 - 5000 ppm (high)	TIIS Ex iad II B T3
75	327	RKI Analytical Instruments GmbH Bad Homburg, Germany	SP-205-ASC	Combination of Catalytic & (Semiconductor)	Portable gas detector	Gas detector for leakage monitoring in semiconductor industry	1 ppm (min.)	n/a
	328	(A Riken Keiki company)	GC-70D NCU	Catalytic	Fixed; hydrogen gas detection, other gas detectors available		0 - 100% LEL	CE
	329		GC-70D SGU	(Semiconductor)	Fixed; hydrogen gas detection, other gas detectors available		0 - 500 / 1000 / 2000 ppm 0 - 2 vol%	CE
76	330	RKI Instruments Inc. Union City, CA, USA	H2 Specific LEL 65-2450RK	Catalytic coated with molecular sieve	Hydrogen-specific sensor/transmitter	Semiconductor, power plants, fuel cell industry, R&D applications, gas plants	0 - 100 % LEL	n/a
	331	(A Riken Keiki company)	H2 Specific ppm 65-2440RK	(Metal oxide semiconductor, with molecular sieve)	Hydrogen-specific sensor/transmitter	Semiconductor, power plants, fuel cell industry, R&D applications, gas plants	0 - 2000 ppm	n/a
	332		PS-2	(Metal Oxide Semiconductor / MOS)	Single point stand alone monitor, LEL or ppm detection ranges available for many gases	Hydrogen detection in battery rooms / battery storage locations petrochemical plants, refineries, automotive, etc.	LEL / ppm	n/a
77	333	Scott Safety Monroe, NY, USA	Freedom 6000	Electrochemical Catalytic	Universal transmitter for toxic (EC) and combustible (CAT) gases for incorporation into a fixed gas detection system; various gas sensors are available, including hydrogen (as toxic gas)	Wide variety of industries: refineries, oil and gas production, gas storage and distribution facilities, etc.	n/a	Combustible Transmitter: Class I, Div. 1, Groups A, B, C, D or Class I, Div. 1, Groups B, C, D ATEX, IECEx (pending) Toxic Transmitter: Class I, Div. 2, Groups B, C, D Class I, Div. 1, Groups B, C, D (pending) ATEX (pending), IECEx (pending)
78	334	SENKO Co. Ltd. Korea	Hydrogen Gas Sensor (P/N SS1178)	Electrochemical	Hydrogen sensor, analog & digital transmitter board available	Portable & fixed gas detector, industrial safety (petrochemical, refining) waste water, sewage treatment plant, mine, etc.	0 - 1000 ppm	n/a

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No. M	No. S	Manufacturer City, Country	Sensor Model	Technology	Description / Remark	Application	Detection Range (H ₂)	Certificates / Approvals / Tests / Classification
	335		Portable Gas Detector (P/N SP2277)	Electrochemical	Portable Gas Detector, specific target gas: hydrogen	Gas detection	0 - 500 ppm 0 - 1000 ppm	EEx ia IIC T4
79	336	Sensitron S.r.l. Cornaredo, Italy	SMART 3G-D2	Catalytic Pellistor type	SMART 3G series, with hydrogen sensor (P/N S2157H2; N.E.T. product line)	Industrial safety, industrial applications with tougher industrial requirements	% LEL	ATEX Certified, Group II 2G SIL2 HW (TUV) EN 502070:2011, EN 61000 (EMC)
	337		SMART 3G-C2	Catalytic Pellistor type	SMART 3G series, with hydrogen sensor (P/N S2097H2; N.E.T. product line)	Industrial safety, industrial applications, high performance products	% LEL	ATEX Certified, Group II 2G SIL2 HW (TUV) EN 502070:2011, EN 61000 (EMC)
	338		SMART S-SS	Catalytic Pellistor type	SMART S Single sensor, Hydrogen sensor availbale (N.E.T. product line)	For toughest industrial requirements, monitoring of toxic and flammable gases in	n/a	ATEX II 2G SIL 2 (3) certified (EN 50402)
80	339	Z.B.P. Sensor Gaz Tychy, Poland	EKP-1/N/H2	Catalytic	Explosimetric Hydrogen sensor head, concentration up to 100% LEL, uses sensor head PC-31xx	Measurement of hydrogen concentration	0 - 100 % LEL H ₂	ATEX II 2G Ex d ia IIC T5
	340		EKP-1/W/H2	Catalytic	Explosimetric Hydrogen sensor head, concentration in range 0-100% V/V, uses sensor head PC-62	Measurement of hydrogen concentration	0 - 100 vol% H ₂	ATEX II 2G Ex d ia IIC T5
	341		EKP-1/NW/H2	Catalytic	Explosimetric Hydrogen sensor head, concentration in range 0-100% V/V in two subranges, uses sensor heads PC-31xx & PC-62	Measurement of hydrogen concentration	Two subranges: 0 - 100 % LEL H ₂ 0 - 100 % vol% H ₂	ATEX II 2G Ex d ia IIC T5
	342		PC-31xx	Catalytic	Pellistor head for use in EKP-1/N/H ₂ and EKP-1/NW/H ₂	Measurement of hydrogen concentration and most combustible gases and vapors	0 - 100 % LEL CH ₄	ATEX I M1 EEx ia I ATEX II 2G EEx ia II
	343		PC-32xx	Thermal Conductivity	sensing element	Measurement of hydrogen concentration and most combustible gases and vapors	0 ... 100 vol% CH ₄	ATEX I M1 EEx ia I ATEX II 2G EEx ia II
81	344	Sensors Europe GmbH Erkrath, Germany	AGM 22	Thermal conductivity	OEM Gas Transmitter for H ₂ , He, Xe, SF6 and other gases	Industrial applications, Gas Warning, Process Control, Gas Quality	0 - 5, 10, 50, 80, 100 vol%	optional
82	345	Hermann Sewerin GmbH Gütersloh, Germany	Snooper mini		Handheld hydrogen leak detector, specific hydrogen sensor in use, no sensor specification	Gas leak detection indoors; leaks in pipes, valves, and other industrial products	0 - 100 ppm, > 100 - 2000 ppm, > 2000 - 10000 ppm (H ₂)	n/a
	346		EX-TEC PM 4	(Semiconductor) (ppm) Catalytic (% LEL) Thermal Conductivity (vol.%)	Flammable gas detection, detection, warning, concentration measuring instrument; Operator selectable flammable gas menu, including hydrogen; no sensor specification	Gas leak detection indoors; % LEL (warning), ppm (detecting), vol.% (measuring) sensors available. Instrument available for warning application, in all combinations of two applications and for all three applications	% LEL (warning): 0 - 4.4 vol% ppm (detecting): 0 - 22000 ppm vol% (measuring): 0 - 100 vol%	ATEX Certificate (94/9/EG) II 2 G Ex d e ib IIB T4
	347		EX-TEC GM 4	Electrochemical	Gas detection, gas warning and gas concentration measuring instrument for toxic and flammable gases, Target gas: Hydrogen etc.	Pipe leak detection Environmental air monitoring Monitoring of chemical or biological processes	0 - 10000 ppm (H ₂)	ATEX Certificate (94/9/EG) II 2 G Ex e ib IIC T4
83	348	SGX Sensortech Chelmsford, UK	EC4-1000-H2	Electrochemical	Hydrogen sensor element	Industrial safety: Mining, oils & gas, confined space entry, indoor air quality, industrial area protection, leak detection	0 - 1000 ppm	n/a
	349		VQ10 SB	Catalytic	combustible gas sensor element, hydrogen (pinhole) compensator		0 - 100 % LEL	n/a

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No. M	No. S	Manufacturer City, Country	Sensor Model	Technology	Description / Remark	Application	Detection Range (H ₂)	Certificates / Approvals / Tests / Classification
	350		VQ1 B	Catalytic Standard pellistor pair	Combustible gas sensor element, detection of combustible gases, particularly methane in air mixtures		10 % max. methane concentration	n/a
	351		VQ2	Catalytic Standard pellistor pair	Combustible gas sensor element, detection of combustible gases, particularly methane in air mixtures		5 % max. methane concentration	n/a
	352		VQ21T B	Catalytic Poison-resitant pellistor pair	Combustible gas sensor element, detection of most flammable gases and vapors	poison resistant detectors for general purpose applications, particularly for fixed point systems where the consideration of power consumption is not an overriding factor	100 % LEL max.	n/a
	353		VQ21T BJ	Catalytic Poison-resitant pellistor pair	Combustible gas sensor element, detection of most flammable gases and vapors	poison resistant detectors for general purpose applications, particularly for fixed point systems where the consideration of power consumption is not an overriding factor	100 % LEL max.	n/a
	354		VQ21T SB	Catalytic Poison-resitant pellistor pair	Combustible gas sensor element, detection of most flammable gases and vapors; Modification for superior performance in the presence of hydrogen	poison resistant detectors for general purpose applications, particularly for fixed point systems where the consideration of power consumption is not an overriding factor	100 % LEL max.	n/a
	355		VQ22B	Catalytic Poison-resitant pellistor pair	combustible gas sensor element		0 - 100 % LEL methane	n/a
	356		VQ23B	Catalytic Poison-resitant pellistor pair	combustible gas sensor element		0 - 100 % LEL methane	n/a
	357		VQ23TB	Catalytic Poison-resitant pellistor pair	combustible gas sensor element		0 - 100 % LEL methane	n/a
	358		VQ24SB	Catalytic Standard pellistor pair	combustible gas sensor element, hydrogen (pinhole) compensator		0 - 100 % LEL methane	n/a
	359		VQ25B	Catalytic Poison-resitant pellistor pair	combustible gas sensor element		0 - 100 % LEL methane	n/a
	360		VQ3	Catalytic Standard pellistor pair	combustible gas sensor element		0 - 100 % LEL methane	n/a
	361		VQ31MB	Thermal conductivity Pellistor pair	combustible gas sensor element		0 - 100 vol%	n/a
	362		VQ35MB	Thermal conductivity Pellistor pair	combustible gas sensor element		0 - 100 vol%	n/a
	363		VQ41TSB	Catalytic Poison-resitant pellistor pair	ammonia/combustible gas sensor element hydrogen (pinhole) compensator		Ammonia 0 - 10 % LEL, 0 - 1.5 vol%	n/a
	364		VQ546M	Thermal conductivity Pellistor pair	Combustible gas sensor element	Ideally suited for use in portable instruments	vol%	ATEX, IECEx, CSA certified, UL recognised II 2G Ex d IIC Gb, I M2 Ex d I Mb
	365		VQ546MR	Thermal conductivity Pellistor pair	Combustible gas sensor element	Ideally suited for use in portable instruments	vol%	ATEX, IECEx, CSA certified, UL recognised II 2G Ex d IIC Gb, I M2 Ex d I Mb

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No. M	No. S	Manufacturer City, Country	Sensor Model	Technology	Description / Remark	Application	Detection Range (H ₂)	Certificates / Approvals / Tests / Classification
	366		VQ547TS	Catalytic Poison-resitant pellistor pair	Combustible gas sensor element	Ideally suited for use in portable instruments	LEL level	ATEX, IECEx, CSA certified, UL recognised II 2G Ex d IIC Gb, I M2 Ex d I Mb
	367		VQ548ZD	Catalytic Poison-resitant pellistor pair	Combustible gas sensor element	Ideally suited for use in portable instruments	LEL level	ATEX, IECEx, CSA certified, UL recognised II 2G Ex d IIC Gb, I M2 Ex d I Mb
	368		VQ548ZD/W	Catalytic Poison-resitant pellistor pair	Combustible gas sensor element, improved version of VQ548ZD	Optimised performance gas sensing head for mining type applications	0 - 100 % LEL methane	ATEX, IECEx, CSA certified, UL recognised II 2G Ex d IIC Gb, I M2 Ex d I Mb
	369		VQ549ZD	Catalytic Poison-resitant pellistor pair	Combustible gas sensor element	Ideally suited for use in portable instruments	LEL level	ATEX, IECEx, CSA certified, UL recognised II 2G Ex d IIC Gb, I M2 Ex d I Mb
	370		VQ549ZD/W	Catalytic Poison-resitant pellistor pair	Combustible gas sensor element, improved version of VQ549ZD	Optimised performance gas sensing head for mining type applications	0 - 100 % LEL methane	ATEX, IECEx, CSA certified, UL recognised II 2G Ex d IIC Gb, I M2 Ex d I Mb
	371		VQ5MB	Thermal conductivity Pellistor pair	combustible gas sensor element		0 - 100 vol%	n/a
	372		VQ61	Catalytic Standard & poison-resitant pellistor pair	combustible gas sensor element		0 - 100 % LEL methane	n/a
	373		VQ621T/1	Catalytic Poison-resitant pellistor pair	combustible gas sensor element		0 - 100 % LEL methane	ATEX, CSA certified II 2G Ex d IIC T5
	374		VQ621T/3	Catalytic Poison-resitant pellistor pair	combustible gas sensor element		0 - 100 % LEL methane	ATEX, CSA certified II 2G Ex d IIC T5
	375		VQ631M/2	Thermal conductivity Pellistor pair	combustible gas sensor element		0 - 100 vol%	ATEX, CSA certified II 2G Ex d IIC T5
	376		VQ641TS/1	Catalytic Poison-resitant pellistor pair	combustible gas sensor element, hydrogen (pinhole) compensator		0 - 100 % LEL methane	ATEX, CSA certified II 2G Ex d IIC T5
84	377	SIM GmbH Oberhausen, Germany	HS 2000 10 00	Catalytic Pellistor	Hydrogen sensor integrated in Agilent Gas Chromatography Systems, Alarm and switch to inert gas at concentration limits	Continuous detection of the hydrogen proportion of the GC oven air	0 - 25 % LEL (0 - 1 vol%) H ₂	n/a
	378		HS 1000 10 00	Catalytic Pellistor	External Hydrogen Sensor System for Gas Chromatography	Continuous detection of the hydrogen proportion of the GC oven air	0 - 25 % LEL (0 - 1 vol%) H ₂	n/a
85	379	Solidsense GmbH Krailling, Germany	SEC H2 20000 4 SE 5 V	Electrochemical Solid-state electrolyte amperometric	Hydrogen gas sensor element	Hydrogen detection	0 - 20000 ppm	n/a
	380		SEC H2 20000 4 S	Electrochemical Solid-state electrolyte amperometric	Hydrogen gas sensor element	Hydrogen detection	0 - 20000 ppm	n/a
	381		SEC H2 20000 Micro	Electrochemical Solid-state electrolyte amperometric	Hydrogen gas sensor element	Hydrogen detection	0 - 20000 ppm	n/a
	382		SEC H2 20000 Micro +	Electrochemical Solid-state electrolyte amperometric	Hydrogen gas sensor element	Hydrogen detection	0 - 20000 ppm	n/a

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	383		SEC H2 20000 SS1	Electrochemical Solid-state electrolyte amperometric	Hydrogen gas sensor element	Hydrogen detection	0 - 20000 ppm	n/a
86	384	Synkera Technologies Inc. Longmont, CO, USA	P/N 701	Resistive Metal oxide semiconductor / MOS	ProKera™ Product Line Trace Hydrogen Sensor	Chemical sensing, security and defense, etc.	n/a	n/a
	385		P/N 703	Resistive Metal oxide semiconductor / MOS	ProKera™ Product Line LEL Hydrogen Sensor	Chemical sensing, security and defense, etc.	1000 ppm - 2% (low power operation LEL hydrogen detection) 50 - 1000 ppm (ppm hydrogen detection)	n/a
	386		P/N 724	Resistive Metal oxide semiconductor / MOS	MicroKera™ 4L Product Line; Hydrogen Sensor Low-power MOS microsensor	Chemical sensing, security and defense, etc.	n/a	n/a
87	387	TAD Gesellschaft für Elektronik-Systemtechnik mbH Unna, Germany	GMS-K2	Thermal conductivity	Stationary Gas Measuring System	H ₂ / O ₂ Measuring system for metallurgic annealing processes	n/a	n/a
	388		GMS.H-H2.wl	Thermal conductivity	Stationary Gas Measuring System	Hydrogen measuring system for tightness tests, determination of hydrogen concentration	n/a	n/a
	389		GME.84-K4	Thermal conductivity	Stationary Gas Measuring System	Process gas analyzing system for simultaneous measurement of CO, CO ₂ , CH ₄ , H ₂ ; determination of hydrogen concentration in multi-component gas	n/a	n/a
	390		EGM	Thermal conductivity	Single Gas Measuring Module	Measurement of single gas component, gas specific sensor, including hydrogen	n/a	n/a
88	391	Teckso GmbH Neukirche-Vlyn, Germany	DVLS3	Catalytic	Portable device	hydrogen leakage in GC		
89	392	Teledyne Analytical Instruments City of Industry, CA, USA	2000A / 2000B	Thermal conductivity	Therma Conductivity Gas analyzer; typically H ₂ , Ar or N ₂ detection	Air separation, petrochemical and refinery, turbine generators, nuclear power generation, steel/heat trating: H ₂ purity monitoring and analysis	Three ranges, application dependent	Optional FM approval: Class I, Div. 2
	393		2000XTC	Thermal conductivity	Thermal conductivity transmitter; no sensor specification	H ₂ purity analysis; detection of H ₂ , He, N ₂ , Ar, CO ₂ or a number of other gases in binary or multi-component sample gas mixtures; Power plant, petrochemical plant, fuel cell development, Electrolysis, etc.	Customer specified	Class I, Div 1, Groups A, B, C, D CENELEC / ATEX as per EEx ib IIC T3 (EN 50020)
	394		2010A / 2010B	Thermal conductivity	Thermal Conductivity Gas analyzer	Air separation, petrochemical and refinery, turbine generators, nuclear power generation, steel/heat trating: H ₂ purity monitoring and analysis	Three ranges, application dependent	Analysis Unit: Class I, Div. 1, Groups B, C, D Explosion-proof

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	395		2020	Thermal conductivity	Thermal Conductivity Gas analyzer	Air separation, petrochemical and refinery, turbine generators, nuclear power generation, steel/heat treating: H ₂ purity monitoring and analysis	Three ranges, application dependent	FM approved: Class I, Div. 1, Groups B, C, D CENELEC versions available
	396		212R	Thermal conductivity	Most sensitive process thermal conductivity analyzer commercially available	Detection of specific impurity in a binary gas mixture, monitoring of one component in more complex mixtures; Trace analyzer Specific binary configuration: e.g. H ₂ in AR, H ₂ in N ₂ or O ₂ ; Air separation plants, H ₂ and He purification plants, Synthetic gas plants, Specialty chemical plants, R&D labs	0 - 25 ppm H ₂ in Ar, N ₂ or O ₂	n/a
	397		2750	Thermal conductivity	Portable analyzer	Design for turbine generator applications, H ₂ in air measurement	0 - 100 % H ₂ in CO ₂ 0 - 100 % Air in CO ₂ 80 - 100 % H ₂ in Air	n/a
90	398	Union Instruments GmbH Karlsruhe, Germany	INCA series		Multisensor analyzing system, flexible configuration, wide range of measurement techniques, sensor systems depending on gas types and concentrations to be measured Single channel/multi channel available	Determination of gas composition Process gas analyzer for the measurement of biogas, biomethane, landfill gas and sewage gas	4000 ppm (H ₂)	ATEX G IIC
	399		SIRA 8000		Explosion-proof multi-gas analyzer	Analysis of gas composition	4000 ppm (H ₂)	ATEX G IIC
	400	TROTEC Heinsberg, Germany	-	(Gas sensor)	handheld detector head or device for soil inspection	leak detection	10 ppm to 2 vol% H ₂	IP 55
	401		LD 6000, LD 6000H2	sonic (acoustic)	amplification 120 dB, hand held	leak detection, handheld device, also combination of acoustic and gas sensor available		
91	402	Unitronic AG Düsseldorf, Germany	USM VGSA	Resistive Semiconductor	Multi-functional gas sensor array	Detection of many different gases, e.g. hydrogen	n/a	n/a
	403		USM 5.1-400	Resistive Semiconductor (SnO ₂)	Gas sensor module for hydrogen detection, uses sensor TGS821 (Figaro), module for other gases available	Gas detection & warning system	Switching value: > 200 ppm	n/a
92	404	UST Umweltsensortechnik GmbH Geschwenda, Germany	GGs 1000 T series	Resistive Semiconductor	Flammable gases, broadband	Leak detection of combustible gases	n/a	n/a
	405		GGs 2000 T series	Resistive Semiconductor	High sensitivity for H ₂ , CO, C ₂ H ₅ OH	Stationary observation of LEL	n/a	n/a
	406		GGs 6000 T series	Resistive Semiconductor	H ₂ detection	Hydrogen detection	n/a	n/a

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	407		Peaker	Resistive Semiconductor	Gas leak detector, portable device, uses GGS 1000 broadband sensor, calibrated for CH ₄ , C ₃ H ₈ , H ₂	Fast and selective detection of gases	Indicators: 1 Operational / ppm 2 ≥ 10 ppm 3 ≥ 100 ppm 4 ≥ 0.1 vol% 5 ≥ 1 vol%	n/a
	408		Hydrogen-Power	Resistive Semiconductor	Gas leak detector, portable device, uses GGS 6000 hydrogen sensitive sensor; (optional: alternative use of CCG 1000 broadband sensor)	Fast and selective detection of hydrogen	Indicators: 1 Operational 2 ≥ 10 ppm 3 ≥ 100 ppm 4 ≥ 999...0.1 vol% 5 ≥ 1 vol%	n/a
	409		Sniffer-HT	(Two sensor technology)	HT-Model for hydrogen-specific leak detection, mobile device	Fast and selective detection of hydrogen, hydrogen gas leak detection from underground pipes and other areas; detection on waste disposal sites, detection of leaks on flat roofs, etc.	< 10 ppm 10 - 100 ppm 100 - 1000 ppm 1000 ppm - 1 vol%	n/a
	410		H2-Semicon®-Sensor-System	Combination of Resistive Semiconductor (SnO ₂) & Thermal conductivity	Highly selective gas sensor system for hydrogen	Leakage monitoring in fuel cell systems, monitoring and control of chemical processes, fixed and mobile gas leak detection	0 - 40000 ppm H ₂	RoHS Directive: 2002/95/EC
	411		H2-Semicon®-Sensor-System pi	Combination of Resistive Semiconductor (SnO ₂) & Thermal conductivity	Highly selective gas sensor system for hydrogen	Leakage monitoring in fuel cell systems, monitoring and control of chemical processes, fixed and mobile gas leak detection	0 - 40000 ppm H ₂	RoHS Directive: 2002/95/EC
93	412	Weidmann Diagnostic Solutions Inc. St. Johnsbury, VT, USA	InsuLogix® H-Hydrogen Monitor	(Patented micro-chip and coating technologies, Pd/Ni sensor)	Monitor uses H ₂ Scan technology based on Supply Agreement	Monitoring of fluid filled electrical equipment; Measuring hydrogen in oil or gas phases, esp. in the oil of power transformers as indicator of fault condition	25 - 5000 ppm	EMI/EMC: IEEE STD C37.90.1, EN 55022/FCC PART 15 & EN 55024/EN 610004; IEC 60068-2-6; IP67 (IEC 60529), NEMA 6; CE Mark (IEC 61000)
94	413	Xensor Integration B.V. Delft, NL	XEN-5310	Thermal conductivity	Hydrogen Sensor, uses Xensor Thermal Conductivity Gauge XEN-TCG3880 for gas type and vacuum measurement	Leak detection, e.g. in fuel cells, filling stations	0 - 4 vol% H ₂	ATEX Conformity Option available soon
	414		XEN-TCG3880	Thermal conductivity	Thermal conductivity gauge based on silicon technology	Gas type measurement: Measurement of thermal conductivity, Measurement of concentration of Helium, CO ₂ , etc, in air, Measurement of binary gas-mixture composition	n/a	n/a
95	415	Zhengzhou Winsen Electronic Technology Co. Ltd. Zhengzhou, China	MQ-2	Resistive Semiconductor (SnO ₂)	Combustible gas sensor element, not hydrogen specific, detects LPG, Propane, Hydrogen etc. conductivity increase with detectable gas concentration	Gas sensor for use in domestic gas leakage detector, portable gas detector, industrial combustible gas detector	300 - 10000 ppm	n/a

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	416		MC114	Catalytic	Combustible gas sensor element, not hydrogen specific	Gas concentration detection in industrial applications, such as natural gas, LPG, etc. combustible gas, gasoline, ... Combustible gas leaking alarm or detectors; Gas concentration meter.	0 - 100 % LEL	n/a
	417		MC115	Catalytic	Combustible gas sensor element, not hydrogen specific	Gas concentration detection in industrial applications, such as natural gas, LPG, etc. combustible gas, gasoline, ... Combustible gas leaking alarm or detectors; Gas concentration meter.	0 - 100 % LEL	n/a
	418		MC116	Catalytic	Combustible gas sensor element, not hydrogen specific	Gas concentration detection in industrial applications, such as natural gas, LPG, etc. combustible gas, gasoline, ... Combustible gas leaking alarm or detectors; Gas concentration meter.	0 - 100 % LEL	n/a
	419		MC119	Catalytic	Combustible gas sensor element, not hydrogen specific	Gas concentration detection in industrial applications, such as natural gas, LPG, etc. combustible gas, gasoline, ... Combustible gas leaking alarm or detectors; Gas concentration meter.	0 - 100 % LEL	n/a
96	420	Zirot GmbH Greifswald, Germany	TCS	Thermal conductivity	Hydrogen Measuring Device; Note: Company specializes in O ₂ sensors based on solid state electrolyte (ZrO ₂)	Hydrogen concentration monitoring	0 - 100 vol%	n/a