Enhanced

Model 9010/9020 LCD Control Unit

[The Sophisticated Hazardous Gas Warning System]

MSA's 9010/9020 LCD control units are designed to offer maximum flexibility to work in conjunction with a wide variety of remote sensors to provide reliable gas detection in a wide range of industries and applications.

Advanced design using SMD and mostly RoHS Directive compliant components throughout and innovative features put the 9010/9020 LCD control units a step ahead of any conventional gas warning system.

The 9010 LCD operates with one independent sensor [single channel] while the 9020 LCD operates with two independent sensors [dual channel] per control module offering considerable cost saving while maintaining high reliability and performance.

Modular design combined with dual channel capability allows for high density packaging in a single 19″ rack [up to 20 points].

A high level of reliability is possible as each control module is fitted with an independent AC/DC power supply transformer and logic circuit with software validated according to ATEX Directive 94/9/EC.

MSA
The Safety Company

9010/9020 LCD: 19″ rack with up to 10 modules [20 points-9020], or as a half rack with up to 5 modules [10 points-9020], or a quarter rack with up to 2 modules [4 points-9020].

9010 LCD: Single channel IP 54 wall mount.

9020 LCD: Dual channel IP 54 wall mount.
[ABS housing with up to five modules also available.]

9020-4 LCD: Four channel IP 65 wall mount with common alarm. Marine Directive ⚓ MED 96/98/EC approved for all demanding applications. Please ask for specific leaflet 07-517.2.

[Features]

- ATEX 94/9/EC compatible where applicable
- Failure status for low AC/DC power
- Over range EEEE latching
- Series connected opto-isolators provide failure status
- Redundant dual contact failure relay [selectable latching/non-latching function]
- Alarm threshold inhibit
- Choice of measuring units – LEL-LELm-PPM-% Vol-g/m³ or blank
- Operates with a complete range of gas sensors and transmitters including semiconductor sensors, conventional smoke and temperature sensors, manual call points, thermo-resistive cable
- 4–20 mA current loop accept [one person]
- Full internal diagnostics
- User-friendly configurable operation
- Firmware can be easily loaded via laptop
- Versatile system functions with logic levels
- Adjustments via membrane keypads
- Up to 20 channels per rack
- Individual terminal blocks per module

[LCD Display]

The 9010/9020 LCD features large 4-digit 7-segment back lit Liquid Crystal Display and high brightness LED's to provide ease of reading and alarm visualisation.

The display provides information on the gas concentration, alarm status, measurement units, flags indicating status and settings such as calibration interval, time-out function, alarm ON delay and alarm inhibit.

[TWA-STEL]

When operating in connection with toxic sensors, the 9010/9020 LCD can be set to alarm when relevant STEL and TWA values are exceeded.

[Sensor Wiring]

According to the specific application, the remote sensors can be connected by means of 2, 3 or 4 wire cabling.

[Benefits]

- Meets ATEX Directive 94/9/EC requirements
- A multi-purpose version which accepts both bridge [mV] and active [4–20 mA] input signals
- A cost-effective version operating on a 4–20 mA input signal is also available
- Satisfies a variety of gas monitoring applications/industries
- Inherent reliability minimises spurious alarms and unexpected "down-time"
- No tools required for adjustments [operation by Access Code]
- High density monitoring

Each control module has an independent LCD display specific to each channel and three keys for configuration, calibration and routine operation. Specific access codes to the various features prevent accidental or undesired tampering.

Error and failure messages on the display warn of any operational anomalies.

Each channel may be equipped with an optional card to provide opto-isolated outputs for the three alarm thresholds: **C** [Caution] **W** [Warning] **A** [Alarm]. The card may either be with common emitter or common collector output.

Each module has two [SPDT] relays with change-over contacts for remote repeat of Warning [W] and Alarm [A] conditions [common to both channels in the 9020 LCD version].

The analogue output signal for each channel can be linearised.

An RS-485 interactive serial interface is available [double on request]. A customised ModBUS RTU protocol can be used for serial bus data transmission such as system configuration, gas concentration, alarm and failure events, alarm inhibit and reset.

In addition to handling the sensor input signal [by current or voltage] the 9010/9020 LCD can also power the remote sensors [by constant current or voltage] enhancing the versatility of the system.

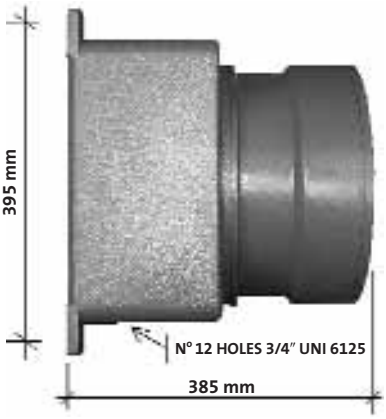
The 9010/9020 LCD control units can be configured to meet the stringent requirements of the ATEX Directive 94/9/EC for combustible gas monitoring or to meet any other applications in gas detection including process control, such as suppressed Zero reading and reverse full scale range and output signal.

[Type Approvals]

The 9010/9020 LCD control units are certified to meet the performance requirements of the following type approvals:

Europe: EN 61779-1, EN 61779-4, EN 50271, EN 50104, EN 50402 [INERIS 00ATEX0028X], SIL 2 [pending], SBG Certificate No. 213.010 SOLAS 74/88
[⎈ MED 96/98/EC]
RINA Certificate No. ELE 04 CS 176101,
China: CCCF GB 16808-97 [pending]
USA: MET Laboratories, Inc. Listing no. E112409, FM approval [pending]
Russia: Pattern Approval Certificate of Measuring Instruments DE.C.31.001A No. 22292, GOST R ROSS DE.GB05.V02463
Ukraine: Pattern Approval Certificate of Measuring Instruments No. UA-MI/1-1921-2006

⟨Ex⟩ housing [ATEX] with up to 4 modules [8 points-9020 LCD].



For installation in classified Zones 1 and 2.

[Rack Dimensions]

Number of modules	weight [kg]	width [mm]	height [mm]	depth [mm]
10	12.50	482.60	132.50	270.00
5	6.60	279.52	132.50	270.00
2	3.00	157.60	132.50	270.00

[Wall Mount Dimensions]

Number of modules	weight [kg]	width [mm]	height [mm]	depth [mm]
1	2.00	255.00	180.00	90.00
2	11.00	300.00	400.00	150.00
1 to 5 ABS	3.00–4.50	205.00–355.00	223.00	360.00

[Technical Data]

Power supply		115/230 VAC ± 15% 50/60 Hz 24 VDC + 15% – 20%	
Power consumption [no load]		**9010 LCD**	**9020 LCD**
■ **AC supply**	**24 VA transformer**	13 VA	15 VA
■ **DC supply**	**24 VDC nominal**	3 W	4 W
Sensor supply			
■ **Constant current**		5 – 500 mA	5 – 500 mA
■ **Constant voltage**		3 – 24 VDC	3 – 24 VDC
Sensor connection modes		2-3-4 wires	
Connection terminals		for wires up to 2.5 mm²	
Input signals		10 – 200 mV/4 – 20 mA	
Output signals can be linearised			
■ **Analogue [normal]**		0 – 20/4 – 20 mA [selectable] floating	
■ **Analogue [fault]**		0/2/4/20 mA/frozen [selectable]	
Serial interface		RS-485	
Alarm levels 3		**C** [Caution] **W** [Warning] **A** [Alarm]	
Alarm remote repeat			
■ **Via relay contacts [SPDT]**		5 A @ 24 VDC/250 VAC*	
■ **Via opto-isolators [common collector or common emitter]**		30 mA @ 24 VDC max.* *resistive load	
Fault and below zero drift alarm			
■ **Via relays**		common to both channels on 9020 LCD and one channel on 9010 LCD	
■ **Via opto-isolators**		individual for each channel [optional card either common collector or emitter]	
Alarm handling			
■ **Reset**		latching/non-latching	
■ **ON delay**		0 – 9999 sec adjustable	
■ **Automatic inhibit**		by specific Access Code	
■ **Manual inhibit**		by specific Access Code	
Electronic speed of response		< 0.5 sec for 100% f.s.	
Span and Zero drift		< ± 0.5% f.s. ± 1 digit/month	
Repeatability		± 1% f.s. ± 1 digit	
Operating temperature		–10° C to +50° C	
Storage temperature		–20° C to +75° C	
Humidity		90% R.H. non-condensing	
Vibrations		unaffected within 10 to 55 Hz, 0.15 mm bandwidth	
LCD display		back lit Liquid Crystal Display/ 4 digit 7 segments	
Optical alarms		high brightness LED's	
Warm-up and self-diagnosis time		60 sec/channel	
Time-out setting		2 – 6 min	
Default and configuration data		stored in EEPROM/MP	

Protections	
■ **AC/DC automatic switching in case of mains failure**	by means of electronic switch
■ **Accidental tampering**	by specific Access Codes and Password
■ **Software self-diagnosis**	by watch-dog and check-sum
A/D Converter	
■ **For controls**	16 bit ± 1 @ 25° C with 4 multiplexed inlets
■ **For analogue signal**	16 bit ± 1 @ 25° C with 2 multiplexed inlets
Front panel size	3 U x 8 T. E.
Weight	720 g
Electrical installation category	II
ATEX designation	⟨Ex⟩ II [2] G [1] G certificate INERIS 00 ATEX 00 28X ⟨Ex⟩ II 2GD EEx d IIC T5 IP 65 EC-type Certificate INERIS 01 ATEX 0057 Ex-proof housing
Approvals	EMC 89/336/EEC-EN 50270 TEST REPORT 78550 EMC NEMKO LOW VOLTAGE 73/23/EEC TEST REPORT 78550 SAF NEMKO VIBRATIONS [9020-4 LCD only] NEMKO IND 2172-1/03

[Ordering Information]

10093583	9010 LCD 24 VA mV & mA
10093585	9010 LCD 24 VA 4 – 20 mA
10093582	9020 LCD 24 VA mV & mA
10093584	9020 LCD 24 VA 4 – 20 mA
10093662	9010 LCD wall mount IP 54
10093663	9020 LCD wall mount IP 54
10093664	9020-4 LCD wall mount IP 65
10094046	Opto-isolator card common collector
10094047	Opto-isolator card common emitter
10093586	9010 main pcb with header
10093588	9020 main pcb with header
10029374	Blank panel
10029329	Rack 19″/2 slots
10029370	Rack 19″/5 slots
10029328	Rack 19″/10 slots
10035782	Rack, mounting plate & ABS enclosure 5-way
10035783	Rack, mounting plate & ABS enclosure 2-way
	Ex-proof ATEX version system is available on request

MSA EUROPE Regional Head Offices & Great Britain [www.msa-europe.com]

Northern Europe
MSA Nederland B.V., Hoorn
Phone +31 [229] 25 03 03
E-Mail info@msaned.nl

Southern Europe
MSA Italiana S.p.A., Rozzano
Phone +39 [02] 89 217-1
E-Mail info-italy@msa-europe.com

Central Europe
MSA AUER GmbH, Berlin
Phone +49 [30] 68 86-24 90
E-Mail info@auer.de

International Sales
MSA EUROPE, Berlin
Phone +49 [30] 68 86-555
E-Mail contact@msa-europe.com

Eastern Europe
MSA Poland Sp. z o. o., Warsaw
Phone +48 [22] 711-50 33
E-Mail mee@msa-europe.com

Great Britain
MSA [Britain] Limited, Coatbridge
Phone +44 [12 36] 42 49 66
E-Mail info@msabritain.co.uk

ID 07-516.2 GB/04/NL/09.08/HA

MSA
The Safety Company