

## User Manual



## Control Unit Module

**Alpa MOD LED1**

Product code: PW-023-A



Reliable and Innovative **Gas Detection & Safety Systems**

We design, manufacture, implement and support:

**Systems for Monitoring, Detection and Reduction of gas hazards**

We invite you to familiarize yourself with our offer on **[www.atestgaz.pl](http://www.atestgaz.pl)**

**Atest Gaz A. M. Pachole sp. j.**

ul. Spokojna 3, 44-109 Gliwice  
Poland








tel.: +48 32 238 87 94

fax: +48 32 234 92 71

e-mail: [contact@atestgaz.pl](mailto:contact@atestgaz.pl)





**[www.atestgaz.pl](http://www.atestgaz.pl)**

## Remarks and reservations


-  Read and understand this manual prior to connection and operation of the device. Keep the User Manual with the device for future reference.
-  The manufacturer shall not be held responsible for any errors, damage or defects caused by improper selection of suitable devices or cables, errors in installation of equipment or any misuse due to failure to understand the document content.
-  Unauthorised repairs and modifications of the device are not allowed. The manufacturer shall discard any responsibility for consequences of such actions.
-  Exposure of the device to the impact of excessive mechanical, electric or environmental factors may lead to damage of the device.
-  Operation of damaged or incomplete devices is not allowed.
-  Engineering of a gas safety system for any specific facilities to be safeguarded may need consideration of other requirements during the entire lifetime of the product.
-  Use of unauthorized spare parts different from the ones listed in Table 4 is strictly forbidden.

## How to use this manual?

-  The following symbols of optical indicators status are used throughout the document:

Symbol	Interpretation
	Optical indicator on
	Optical indicator flashing
	Optical indicator off
	Optical indicator status not determined (depends on other factors)

**Table 1: Optical indicators status notation**

-  Important fragments of the text are highlighted in the following way:



Pay extreme attention to information provided in such framed boxes.

This User Manual consists of a main text and attached appendices. The appendices are independent documents and can be used separately from this Manual. Page numbering of appendices starts anew with no relationship to page numbering of the main document and appendices may have their own tables of contents. In the right bottom corner of each page you can find the name (symbol) of any document included into the User Manual package with its revision (issue) number.

## Table of contents

<b>1 General information.....</b>	<b>5</b>
<b>2 Safety.....</b>	<b>5</b>
<b>3 Description of the construction.....</b>	<b>5</b>
<b>4 User interface.....</b>	<b>6</b>
4.1 Operation.....	6
4.2 Warning.....	6
4.3 Alarm.....	6
4.4 Failure.....	7
<b>5 Memory status.....</b>	<b>7</b>
<b>6 Electric interface.....</b>	<b>7</b>
6.1 Relay outputs R1 – 4.....	8
<b>7 System architectures.....</b>	<b>9</b>
<b>8 Life cycle.....</b>	<b>10</b>
8.1 Transport.....	10
8.2 Installation.....	10
8.3 Commissioning.....	11
8.4 Periodical operations.....	11
8.5 Utilization.....	11
<b>9 Technical specification.....</b>	<b>12</b>
<b>10 List of consumables.....</b>	<b>13</b>
<b>11 Product marking.....</b>	<b>13</b>
<b>12 Appendices.....</b>	<b>13</b>

## List of Tables




Table 1: Optical indicators status notation.....	3
Table 2: Electric connections description.....	8
Table 3: Technical specification.....	12
Table 4: List of consumables.....	13
Table 5: Method of product's marking.....	13

## List of Figures

Figure 1: The construction of the device and its dimensions.....	5
Figure 2: Status of contacts for the R1 – R3 relays.....	8
Figure 3: Status of contacts for the R4 FAILURE relay.....	9
Figure 4: Connection of peripheral equipment to the Control Unit within an open control loop.....	9
Figure 5: Connection of peripheral equipment to the Control Unit within a closed control loop.....	10

## 1 General information

The control unit module Alpa MOD LED1 is a single-channel control device designed for operation at facilities with a risk of hazardous gases presence, for instance toxic gases (CO, NO<sub>x</sub>), flammable gases (CH<sub>4</sub>, LPG) or any other gases that can be monitored by means of appropriate detectors. The complete system is made up of measuring (threshold) detectors, a power adapter, audial and visual signal towers (stacklights), additional warning boards to produce audial and visual warning and alarm signals as well as a control unit that is responsible for the following issues:

-  analysis of signals received from detectors,
-  dissemination of warning and alarm signals,
-  monitoring and troubleshooting of the system.

## 2 Safety



All activities related to connecting detectors, signallers and other system components must be carried out while Control Unit's power supply is off.

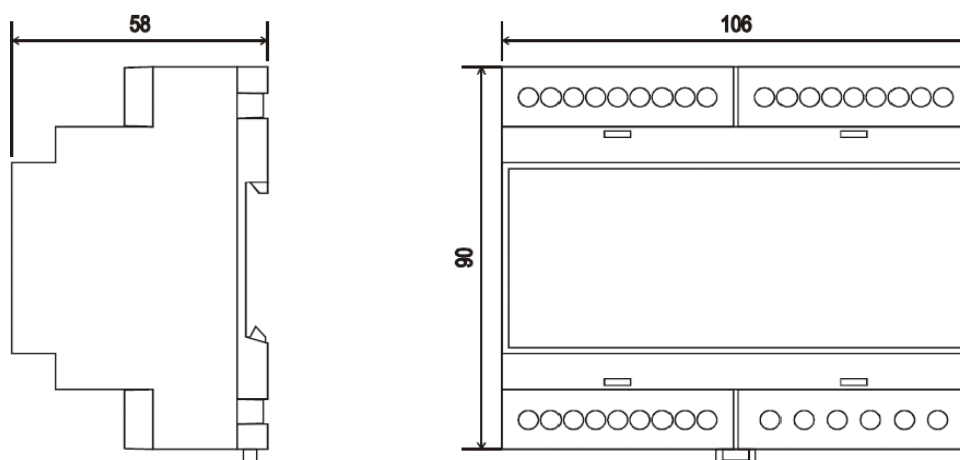


Despite the power supply voltage for the Gas Safety System is off, dangerous voltage may persist across terminals of the Control Unit. Such a voltage may come from another system controlled by the same unit, for instance ventilation, that use one output pin of the Control Unit.



The control unit module must be reliably secured during any repair, installation or maintenance works.

## 3 Description of the construction



**Figure 1: The construction of the device and its dimensions**

## 4 User interface

Operation of the Control Unit Module consists in continuous execution of a control loop that comprises readouts of signals from gas detectors and scanning of the detectors to check their operation soundness. Depending on the scanning results the following statuses of the system can be distinguished:

-  OPERATION
-  WARNING
-  ALARM
-  FAILURE

### 4.1 Operation






This is the basic mode of operation when everything is fine. This status is identified on the basis of only green lamps being on (OPERATION, SUPPLY, R4).

### 4.2 Warning

This condition occurs when a small gas leak is detected that requires user notification in order to take appropriate control measures. Control Unit Module Alpa MOD LED1 distinguishes between two warning thresholds:






#### 4.2.1 Warning I

This status is indicated by:


-  red ALARM light blinking ,
-  in this status an intermittent beep will be emitted, which can be blocked by pressing and holding for a few seconds the CONFIRM button,
-  the OC WARNING signal is enabled, to control the external optical signaller,
-  R1 (WARNING1) relay is activated and the green control indicator 1 goes on.


#### 4.2.2 Warning II

This status is indicated by:

-  red ALARM light starts blinking  with a higher frequency,
-  continuous warning sound is horned, this sound signal can be switched off by depressing and holding the CONFIRM button for few seconds,
-  OC WARNING signal is activated to control an external optical signaller,
-  2 (WARNING2) relay is activated and the green control indicator 2 goes on (1 is still on).



### 4.3 Alarm

It appears when concentration detected by one of the detectors has exceeded the threshold value of ALARM. It is accompanied by continuous red light of the controls  ALARM. In this status:

-  an acoustic continuous signal is generated – just like in the warning by means of a built-in horn,



The ALARM status does not allow to turn of the horn.

-  the system turns on the OC ALARM, to control the external signaller,
-  the 3 relay (ALARM) and the green 3 control (1 and 2 sustained) are activated.

Action to be taken when ALARM is signalled:

- ✍ remove unauthorized persons from the affected area,
- ✍ as far as possible, allow ventilation of the premises which are at risk – by opening windows, doors (if the control module does not automatically switch on the ventilation),

#### 4.4 Failure

Alongside with the process of gas concentration measurement, the device performs number of test measurements designed to determine the technical condition of the system. The purpose of this step is to detect and signal to the user all the flaws in its operation. When faulty operation on one of the detectors is detected the device signals FAILURE through:

- ✍ activation of the yellow control failure,
- ✍ deactivation of the 4 relay (FAILURE) and the green 4 control.

## 5 Memory status

Regular operation of the device is confirmed by continuous light of the OPERATION and SUPPLY controls. When any irregularity of the system operation lead to short-term presence of any following status:

- ✍ FAILURE
- ✍ ALARM
- ✍ WARNING


the failure is recorded in the memory of the device even if the causing irregularity disappears, which is indicated by blinking of the green MEMORY control. Information about the failure can be retrieved from the memory only after switching the device over to the OPERATION conditions.

To read the memory content follow the following sequence operations:

- ✍ Depress the PAMIĘĆ (MEMORY) button, the memory content shall be displayed, which is accompanied with continuous lighting of the PAMIĘĆ (MEMORY) indicator lamp.
- ✍ Depress the KASUJ (ERASE) button and hold it for 15 seconds, the entire content of the memory shall be erased.
- ✍ Depress the PAMIĘĆ (MEMORY) button one again, the display shall return to presentation of the current status.

## 6 Electric interface

Interfaces are available via a terminal strip. Description of individual terminals is shown in Figure 2 and in Table 2.

	2A						NC	NO	COM	NC	NO	COM
	+	-	+	S	-		R4 FAILURE			R3 ALARM		
	POWER						DET. INPUT					



W	AL	PWR	LOOP TEST OUT			R1 WARNING I			R2 WARNING II		
OC1-	OC2-	+12V	-	S	+	COM	NO	NC	COM	NO	NC

Figure 2: Electric connections

Name	Pin	Description
POWER		Power supply port
	-	Negative
	+	Positive
DET. INPUT		Gas detector port
	+	Positive
	S	Signal input
	-	Negative
LOOP TEST OUT		Test port
	+	Positive
	S	Test input of the current loop
	-	Negative
R1 – R4		Relay outputs, see Section 6.1
	COM	Common
	NO	Normally open
	NC	Normally close
W	OC1-	Output – ALARM
AL	OC2-	Output – ALARM
PWR	+12V	Signaller supply common signal

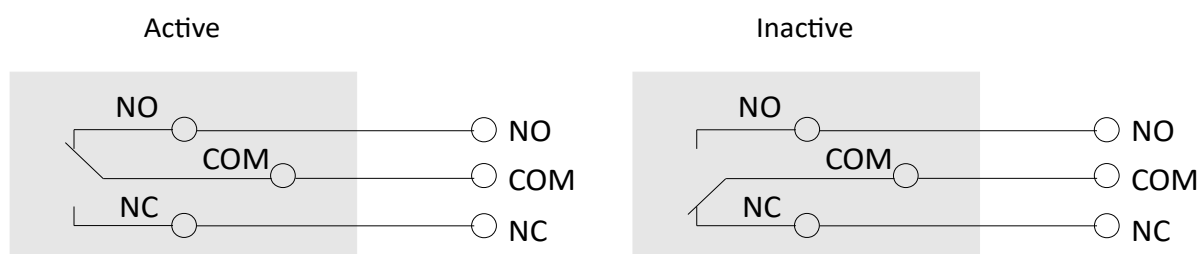
**Table 2: Electric connections description**

The detector is connected to the control unit using a three-wire cable to the appropriate terminals + S -.

-  Signaller to the terminal OC Output (+12V, OC1, OC2).
-  Control Unit Module Alpa MOD LED1 has 4 relays with potential-free contacts that can be used to control automation systems, signalling or ventilation systems (eg a two-speed fan). When performing these installations, remember that for safety reasons, the device is without a mains switch.

## 6.1 Relay outputs R1 – 4

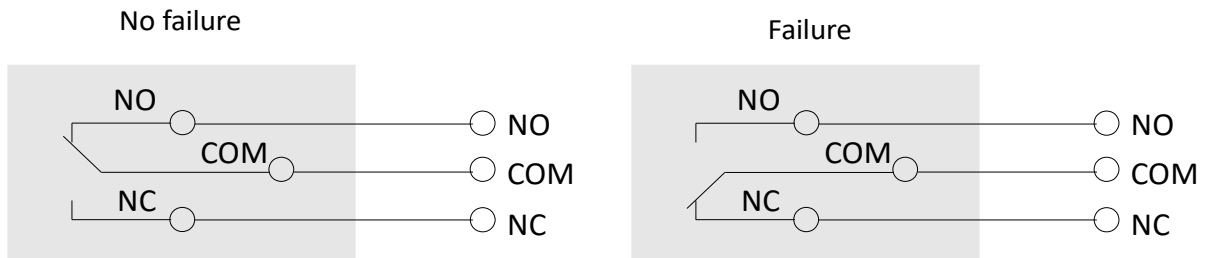
The control unit module has four (4) relay outputs. These outputs can adopt one of the two statuses: active or inactive. Terminals of the R1 – R3 relays can switch over to the following positions:



**Figure 2: Status of contacts for the R1 – R3 relays**



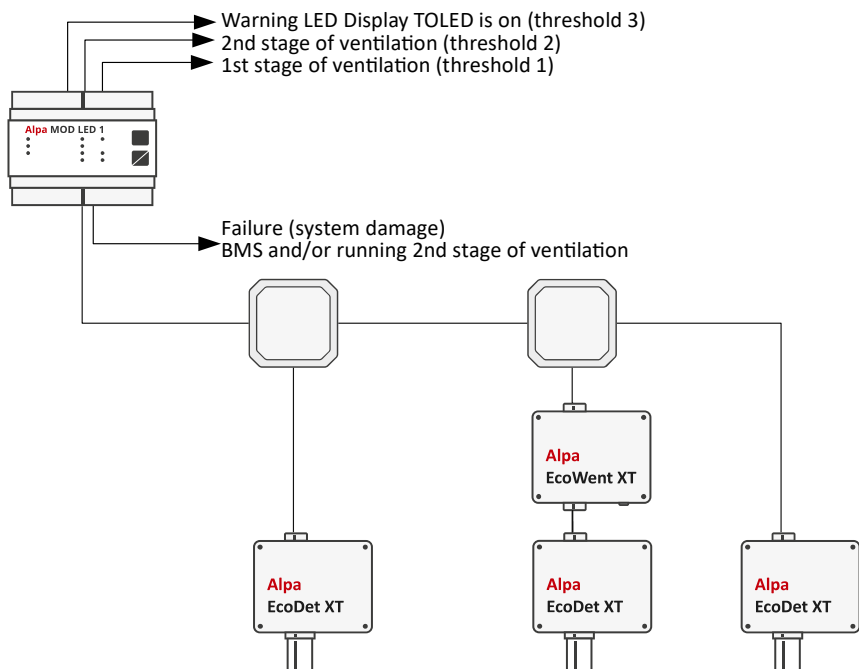
Statuses of the R4 FAILURE are shown on the illustration below:



**Figure 3: Status of contacts for the R4 FAILURE relay**

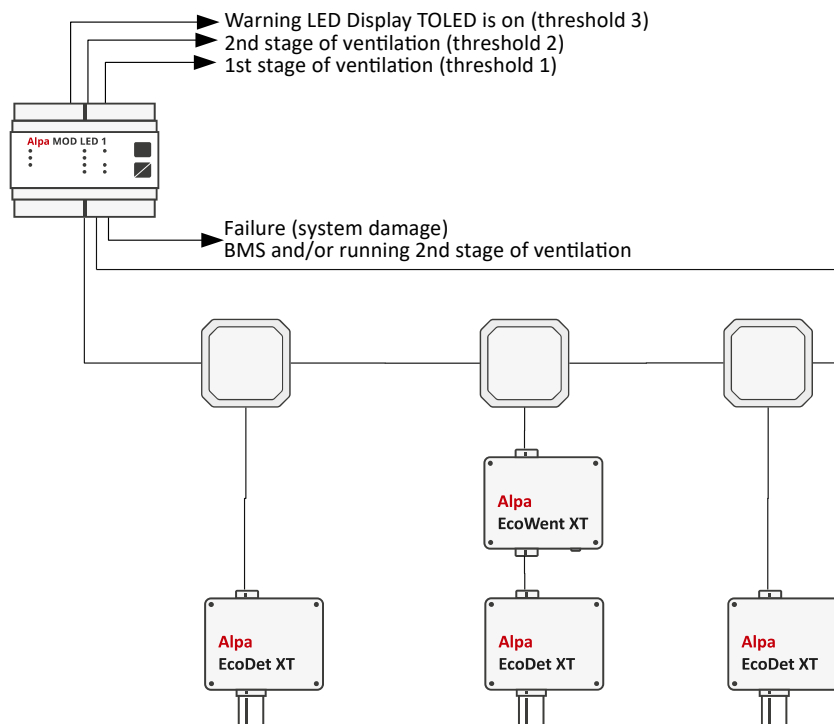
## 7 System architectures

The drawing below presents a typical solution for the Gas Detection System based on the Control Unit Module Alpa MOD LED1.



**Figure 4: Connection of peripheral equipment to the Control Unit within an open control loop**

Please refer to Appendix [2] for details about the number of detector that can be connected within the open loop control architecture.



**Figure 5: Connection of peripheral equipment to the Control Unit within a closed control loop**

Please refer to Appendix [2] for details about the number of detector that can be connected within the open loop control architecture.

The architecture with a closed control loop makes it possible to connect more detectors to the control module and to carry out the system test directly from the control unit, which is infeasible in case of an open control loop. Details of these procedures are described in Section 8.3.

## 8 Life cycle

### 8.1 Transport

The device can be shipped in the same way as new equipment of that type. If the original package or another protecting means (e.g. corks) is unavailable the conveyed equipment must be secured against shocks, vibrations or moisture by means of adequate methods and material at the own responsibility of the sender.

### 8.2 Installation

The control unit should be installed inside a control cabinet on the DIN35 rail or inside a terminal box. The mounting position should be as shown in Figure 1. The device must be easily accessible to authorized staff but, if possible, access of third and unauthorized persons should be prevented. It is recommended to install the device at an appropriate height to enable unobstructed access to the device.

If electric connections are made by means of multi-wire conductors (commonly referred to as a strand), conductor ends must be secured by means of terminal sleeves.


When two conductors are to be connected to a single terminal clamp of the device they must be encapsulated first within a common clamping bushing (lug) – see details in Table 3.



It is unacceptable to combine in one connector two wires which are not pinched in one cable lug.

### 8.3 Commissioning

#### 8.3.1 Test for the system with a closed control loop

The systems that include the Control Unit Module Alpa MOD LED1 collaborating with the Alpa EcoWent XT, Alpa EcoDet XT or Alpa EcoTerm XT mutually connected within a closed current loop are capable of executing a test of that loop upon any request of the system operator. To initiate the test please held and depress for 15 seconds the both buttons PAMIĘĆ (MEMORY) and POTWIERDZENIE (ACK). Start of the test shall be signalled by a short sound beep with activation of the yellow TEST indicator lamp and deactivation of the PRACA (OPERATION) LED. Successful passing of the test by the device is indicated by activation of the red indicator light  ALARM. Testing of the system takes about 1 minute and afterwards the unit indicates its return to the regular operation mode. Should the ALARM indicator light fails to go on it means that the unit failed the test. If so, check connections of the gas detectors with the control unit, make sure that jumpers are in correct positions and start the test once again. Should subsequent tests fail as well, please contact the equipment manufacturer.



Test of the gas monitoring system is only possible when the control unit is in the PRACA (OPERATION) mode. For systems with an open control loop such a test is infeasible.

#### 8.3.2 Test for the system with an open control loop

To carry out the test for a system with an open control loop please remove the lid of the last detector of the loop and depress the TEST button inside the enclosure.

### 8.4 Periodical operations

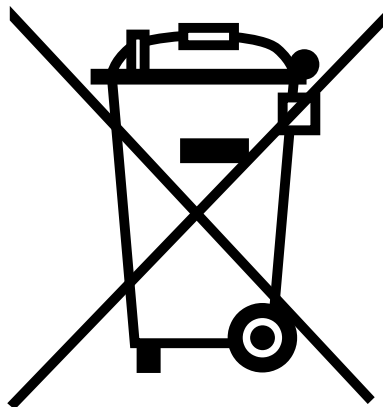
The device should be subjected to periodic inspection of its technical condition. It is the user's responsibility.

#### 8.4.1 Maintenance

Except cleaning the external part of the enclosure, the device does not require any maintenance. The external part of the enclosure should be cleaned by means of a soft cloth moistened with water and a bit of a mild detergent.

The control unit module must be reliably secured during any repair, installation or maintenance works.

### 8.5 Utilization



This symbol on a product or on its packaging indicates that the product must not be disposed of with other household waste. Instead, it is the user's responsibility to ensure disposal of waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The proper recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. Information about relevant designated collection points can be obtained from the Local Authority, waste disposal companies and in the place of purchase. The equipment can also be returned to the manufacturer.

## 9 Technical specification

Power supply		
• Voltage $V_{cc}$	12 – 28 V $\overline{\text{AC}}$	
• Power	5 W <sup>1</sup>	
Number of input channels:	1	
Environment	In operation	Storage
• Ambient temperatures	-20 – 40°C	0 – 40°C
• Humidity	10 – 90% long term 0 – 99% short term	30 – 90% long term
• Pressure	1013 $\pm$ 10% hPa	
• pH	5.5 – 7	
IP	IP 20	
Analogue input parameters		
• $R_{IN}$	200 $\Omega$	
Analogue output parameters		
• $R_{LOAD\_MAX}$	200 $\Omega$	
Digital output parameters		
• Relay	Floating contacts: AC1 <sup>2</sup> : 230 V $\sim$ / 3 A DC1: 230 V $\overline{\text{AC}}$ / 0.25 A DC1: 24 V $\overline{\text{AC}}$ / 3A Not protected	
• OC	12 V $\overline{\text{AC}}$ , maximum total load of outputs 300 mA Common + Not protected	
Integrated signalling equipment (visual)	LED controls	
Integrated signalling equipment (optical)	75 dB, 1 m distance	
Dimension	See Figure 1	
Acceptable cables	1 – 2 mm <sup>2</sup> (cable lugs 2 x 1 mm <sup>2</sup> or 2 x 0.75 mm <sup>2</sup> should be used for double wires)	
Enclosure material	Self-extinguishing PPO	
Weight	0.3 kg	
Mounting	On DIN-35 / TS35	

**Table 3: Technical specification**

1 The given value refers to the power consumption only for the Alpa MOD LED1 Control Module. When determining the total consumption by the gas detection system, the power absorbed by all devices in the system should be taken into account, eg detectors, signalling devices, battery charging, etc.

2 PN-EN 60947 – Low-voltage switchgear and controlgear.

## 10 List of consumables

Consumables	Lifetime	No.	Manufacturer	Product code
Miniature slow fuse T 2 A, enclosure TR5	-	1	-	-

**Table 4: List of consumables**

## 11 Product marking

Product code	Device
PW-023-A	Control Unit Module Alpa MOD LED1

**Table 5: Method of product's marking**

## 12 Appendices




- [1] DEZG025-ENG – EU Declaration of Conformity – Alpa MOD LED1
- [2] PU-Z-098-ENG – Maximum quantity of Alpa EcoWent XT and Alpa EcoDet XT detectors by cable type
- [3] PU-Z-106-ENG – Maximum quantity of Alpa EcoTerm XT detectors by cable type
- [4] PU-Z-021-ENG – Connection diagram – an open alarm loop
- [5] PU-Z-025-ENG – Connection diagram – closed alarm loop

# EU Declaration of Conformity

Atest-Gaz A. M. Atest-Gaz A. M. Pachole sp. j. declares with full responsibility, that the product:

(Product description)	(Trade name)	(Type identifier or Product code)
<b>Control Unit Module</b>	<b>Alpa MOD LED1</b>	<b>PW-023</b>

complies with the following Directives and Standards:

-  in relation to Directive 2014/30/EU – on the harmonisation of the laws of the Member States relating to electromagnetic compatibility:
  - EN 50270:2015
-  in relation to Directive 2014/35/UE – on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits:
  - EN 60335-1:2012
-  In relation to directive 2011/65/EU – on the restriction of the use of certain hazardous substances in electrical and electronic equipment
  - EN IEC 63000:2018

This declaration of conformity is issued under the sole responsibility of the manufacturer.

This EU Declaration of Conformity becomes not valid in case of product change or rebuild without manufacturer's permission.

Gliwice, 21.06.2022

  
(Name and Signature)  
Managing Director  
Aleksander Pachole

# Maximum quantity Alpa EcoWent XT and Alpa EcoDet XT detectors by cable type

## 1 Open loop configuration

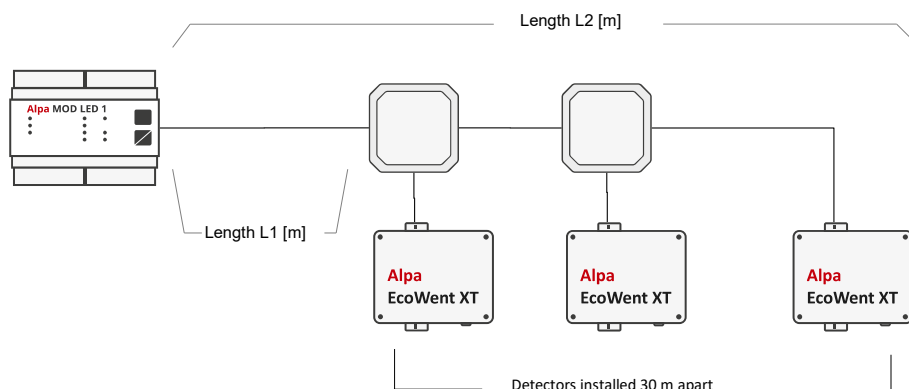
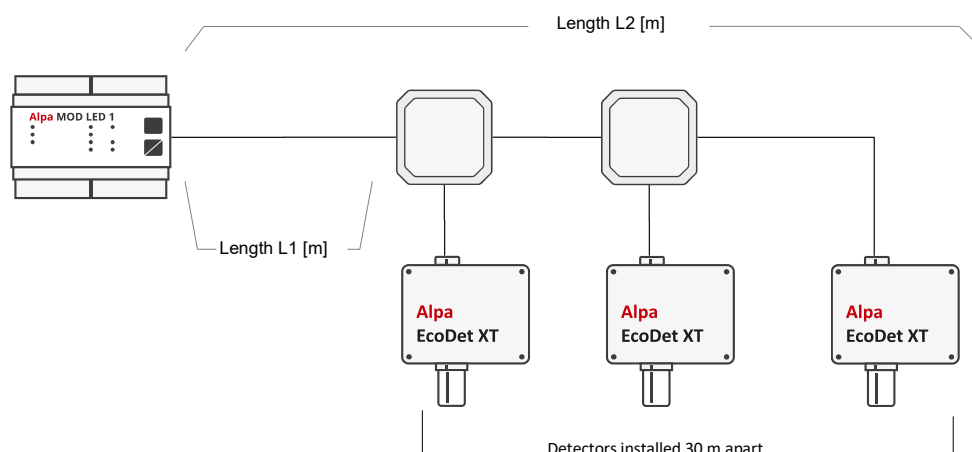


Figure 1: Open loop configuration for Alpa EcoWent XT detectors

Cross-section of a single cable conductor [mm <sup>2</sup> ]	Alpa EcoWent XT Gas Detector					
	System without backup battery supply (U <sub>IN</sub> = 24 V)			System with backup battery supply (U <sub>IN(min)</sub> = 20 V)		
	L1 [m]	L2 [m]	Quantity of detectors	L1 [m]	L2 [m]	Quantity of detectors
0,75	58	628	20	53	533	17
	91	631	19	87	537	16
	127	637	18	123	543	15
	165	645	17	163	553	14
	206	656	16	206	566	13
1	63	723	23	75	615	19
	96	726	22	109	619	18
	131	731	21	146	626	17
	168	738	20	186	636	16
	207	747	19	229	649	15
1,5	62	872	28	81	741	23
	94	874	27	115	745	22
	128	878	26	150	750	21
	163	883	25	188	758	20
	200	890	24	229	769	19
2,5	69	1389	45	53	1193	39
	100	1390	44	84	1194	38
	133	1393	43	116	1196	37
	166	1396	42	150	1200	36
	200	1400	41	184	1204	35

Table 1: Maximum quantity of Alpa EcoWent XT detectors – open loop configuration

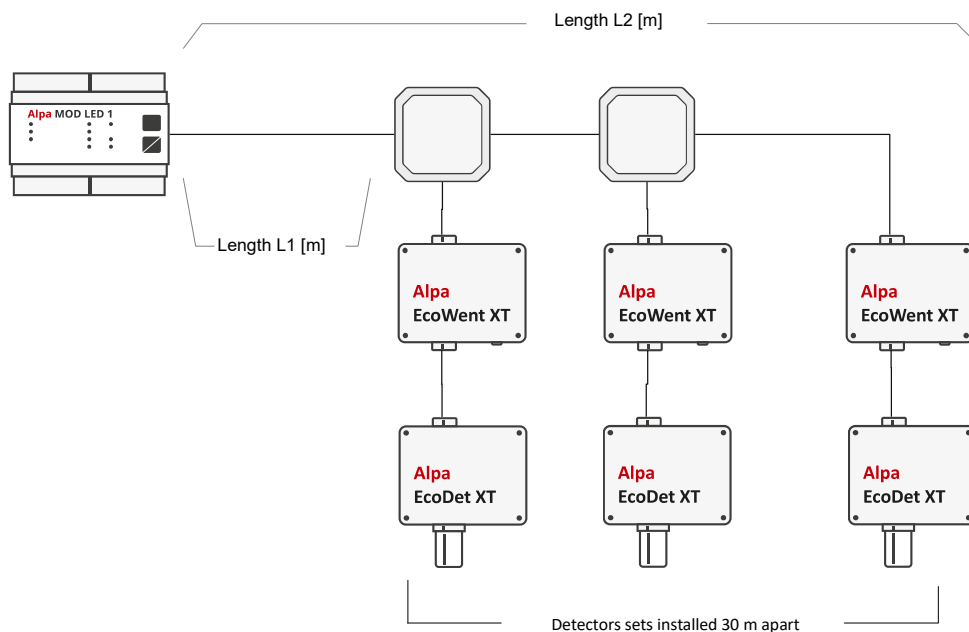


**Figure 2: Open loop configuration for Alpa EcoDet XT detectors**

Cross-section of a single cable conductor [mm <sup>2</sup> ]	Alpa EcoDet XT Gas Detector					
	System without backup battery supply (U <sub>IN</sub> = 24 V)			System with backup battery supply (U <sub>IN(min)</sub> = 20 V)		
	L1 [m]	L2 [m]	Quantity of detectors	L1 [m]	L2 [m]	Quantity of detectors
0,75	72	402	12	67	337	10
	109	409	11	103	343	9
	147	417	10	145	355	8
	190	430	9	194	374	7
	241	451	8	257	407	6
1	73	461	14	55	385	12
	107	463	13	89	389	11
	144	474	12	126	396	10
	184	484	11	169	409	9
	229	499	10	218	428	8
1,5	45	555	18	42	462	15
	77	557	17	74	464	14
	111	561	16	109	469	13
	146	566	15	146	476	12
	184	574	14	187	487	11
	224	584	13	234	504	10
2,5	35	725	24	28	598	20
	66	726	23	59	599	19
	98	758	22	91	601	18
	132	762	21	125	605	17
	166	766	20	160	610	16

**Table 2: Maximum quantity of Alpa EcoDet XT – open loop configuration**



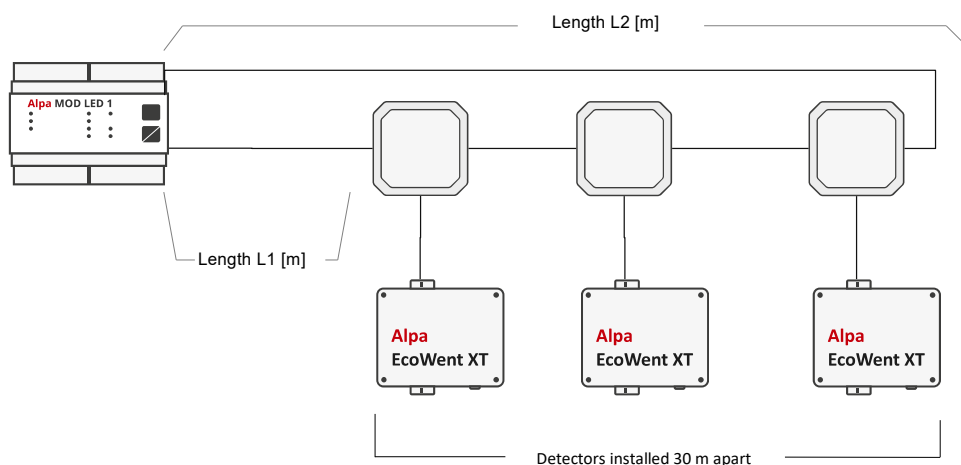


**Figure 3: Open loop configuration for sets of Alpa EcoWent XT and Alpa EcoDet XT detectors**

Cross-section of a single cable conductor [mm <sup>2</sup> ]	A set of one Alpa EcoWent XT Gas Detector and one Alpa EcoDet XT Gas Detector					
	System without backup battery supply (U <sub>IN</sub> = 24 V)			System with backup battery supply (U <sub>IN(min)</sub> = 20 V)		
	L1 [m]	L2 [m]	Quantity of sets	L1 [m]	L2 [m]	Quantity of sets
0,75	70	319	9	80	267	7
	107	325	8	122	278	6
	152	339	7	173	298	5
	203	359	6	243	337	4
1	58	369	11	56	305	9
	93	373	10	93	311	8
	133	382	9	135	322	7
	177	395	8	185	341	6
	229	416	7	249	374	5
1,5	78	451	13	62	373	11
	114	456	12	98	378	10
	153	464	11	138	387	9
	197	477	10	183	432	8
	245	494	9	237	424	7
2,5	66	636	20	52	532	17
	99	639	19	84	534	16
	133	643	18	118	538	15
	169	649	17	154	544	14

**Table 3: Maximum quantity of sets of Alpa EcoWent XT and Alpa EcoDet XT – open loop configuration**

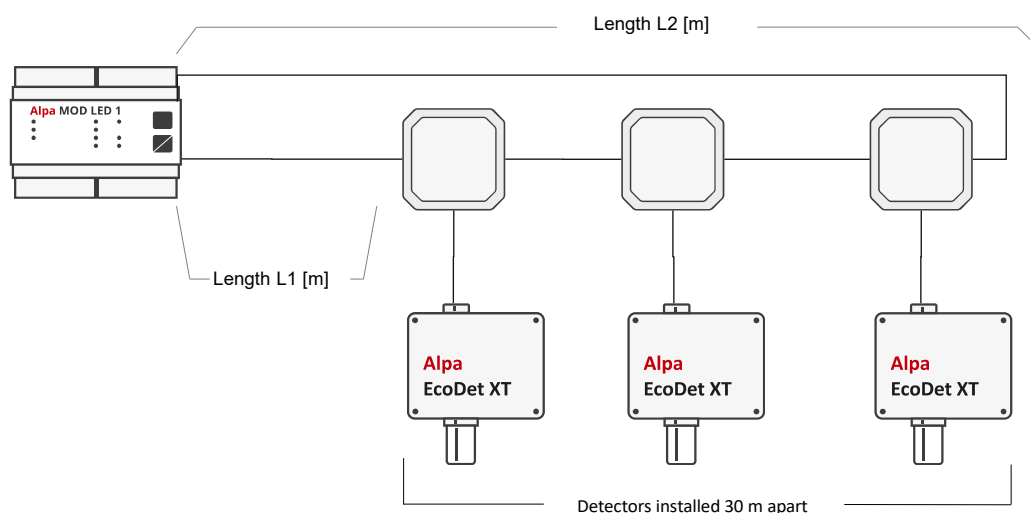
## 2 Closed loop configuration



**Figure 4: Closed loop configuration for Alpa EcoWent XT detectors**

Cross-section of a single cable conductor [mm <sup>2</sup> ]	Alpa EcoWent XT Gas Detector					
	System without backup battery supply (U <sub>IN</sub> = 24 V)			System with backup battery supply (U <sub>IN(min)</sub> = 20 V)		
	L1 [m]	L2 [m]	Quantity of detectors	L1 [m]	L2 [m]	Quantity of detectors
0,75	57	807	26	50	680	22
	89	809	25	83	683	21
	123	813	24	118	688	20
	160	820	23	153	693	19
	198	828	22	194	704	18
	237	837	21	237	717	17
1	63	933	30	67	787	25
	96	936	29	101	791	24
	130	940	28	136	796	23
	164	944	27	172	802	22
	202	952	26	212	812	21
1,5	50	1130	36	55	955	31
	82	1132	35	87	957	30
	115	1135	34	120	960	29
	149	1139	33	155	965	28
	184	1144	32	192	972	27
	220	1150	31	230	980	26
2,5	47	1877	62	56	1616	53
	78	1878	61	87	1617	52
	110	1880	60	119	1619	51
	142	1882	59	152	1622	50
	174	1884	58	185	1625	49

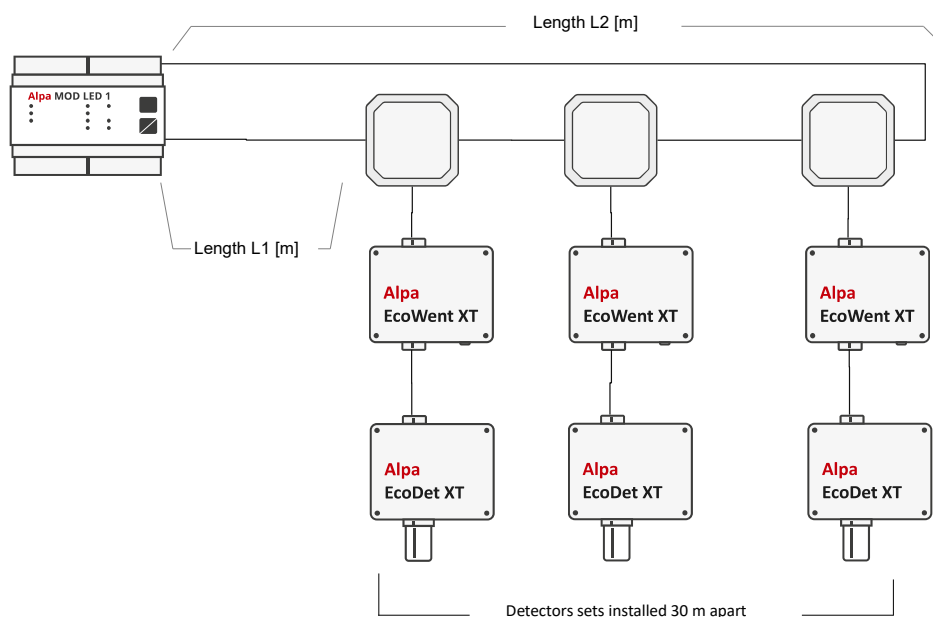
**Table 4: Maximum quantity Alpa EcoWent XT – closed loop configuration**



**Figure 5: Close loop configuration for Alpa EcoDet XT detectors**

Cross-section of a single cable conductor [mm <sup>2</sup> ]	Alpa EcoDet XT Gas Detector					
	System without backup battery supply (U <sub>IN</sub> = 24 V)			System with backup battery supply (U <sub>IN(min)</sub> = 20 V)		
	L1 [m]	L2 [m]	Quantity of detectors	L1 [m]	L2 [m]	Quantity of detectors
0,75	45	495	16	50	410	13
	76	496	15	86	415	12
	112	502	14	120	420	11
	149	509	13	160	430	10
	190	520	12	207	447	9
	235	535	11	-	-	-
1	64	574	18	55	475	15
	97	577	17	89	479	14
	132	582	16	124	484	13
	169	589	15	163	493	12
	209	599	14	207	507	11
1,5	67	697	22	68	578	18
	99	699	21	101	581	17
	133	703	20	137	587	16
	169	709	19	174	594	15
	207	717	18	215	605	14
2,5	51	951	31	65	785	25
	82	952	30	98	788	24
	115	955	29	131	791	23
	148	958	28	166	796	22
	182	962	27	203	803	21

**Table 5: Maximum quantity of Alpa EcoDet XT – closed loop configuration**

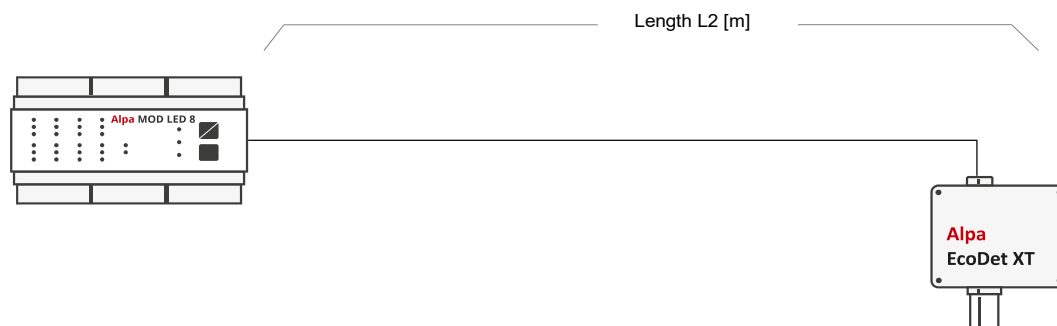


**Figure 6: Closed loop configuration for sets of Alpa EcoWent XT and Alpa EcoDet XT detectors**

Cross-section of a single cable conductor [mm <sup>2</sup> ]	A set of one Alpa EcoWent XT Gas Detector and one Alpa EcoDet XT Gas Detector					
	System without backup battery supply (U <sub>IN</sub> = 24 V)			System with backup battery supply (U <sub>IN(min)</sub> = 20 V)		
	L1 [m]	L2 [m]	Quantity of sets	L1 [m]	L2 [m]	Quantity of sets
0,75	53	426	13	44	355	11
	88	430	12	78	358	10
	126	437	11	162	411	9
	169	449	10	217	435	8
	218	467	9	-	-	-
1	59	494	15	71	413	12
	94	498	14	108	419	11
	131	504	13	149	429	10
	172	514	12	197	446	9
	217	528	11	252	490	8
1,5	40	599	19	66	501	15
	75	603	18	101	505	14
	108	605	17	139	512	13
	144	610	16	181	523	12
	184	619	15	228	539	11
	227	631	14	-	-	-
2,5	24	834	28	38	698	23
	55	835	27	70	700	22
	87	837	26	103	703	21
	120	840	25	137	707	20
	154	844	24	173	713	19

**Table 6: Maximum quantity of sets of Alpa EcoWent XT and Alpa EcoDet XT – closed loop configuration**

### 3 Star configuration



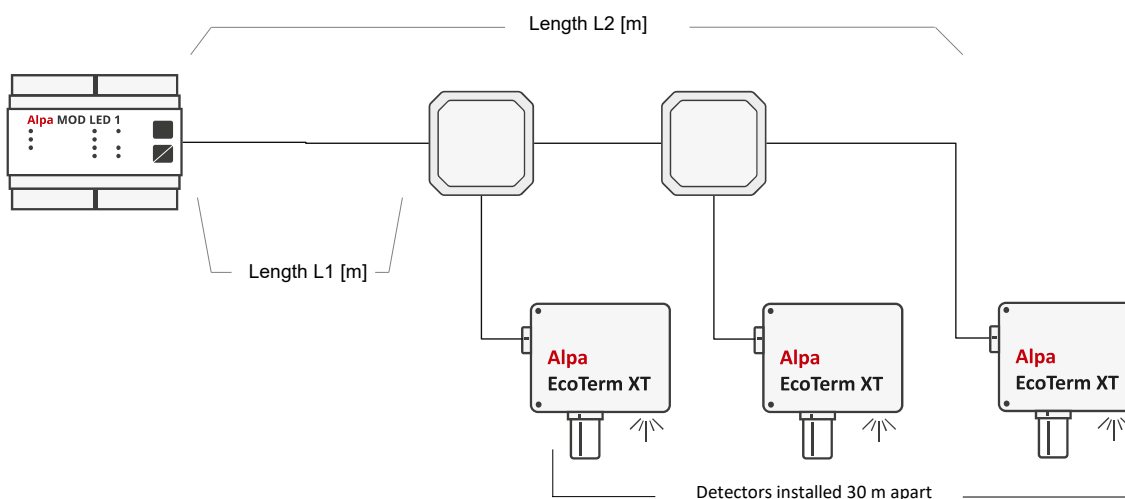
**Figure 7: Star configuration**

Cross-section of a single cable conductor [mm <sup>2</sup> ]	System with backup battery supply ( $U_{IN(min)} = 20\text{ V}$ )	
	One Alpa EcoWent XT Gas Detector at the end of the line	One Alpa EcoDet XT Gas Detector at the end of the line
	L2 [m]	L2 [m]
0,75	1400	1400
1	1400	1400
1,5	1400	1400
2,5	1400	1400

**Table 7: Maximum length of cables – star configuration**

# Maximum quantity of Alpa EcoTerm XT detectors by cable type

## 1 Open loop configuration



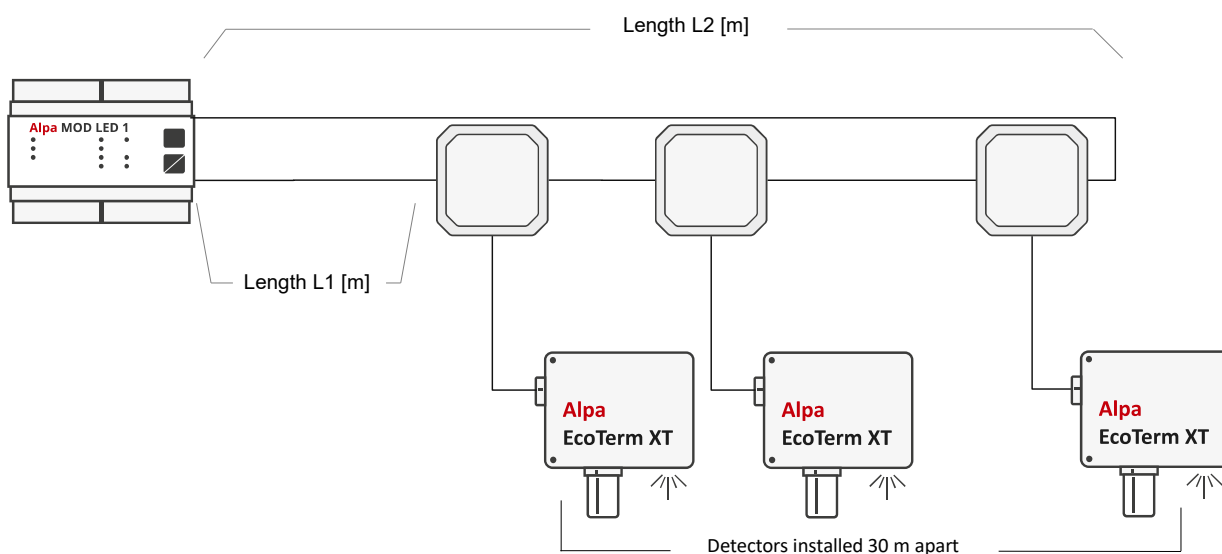
L1 – distance T-connector of the first detector from the control unit  
L2 – distance T-connector of the last detector from the control unit

**Figure 1: Open loop configuration**

Cross-section of a single cable conductor [mm <sup>2</sup> ]	Alpa EcoTerm XT Gas Detector					
	System without backup battery supply (U <sub>IN</sub> = 24 V)			System with backup battery supply (U <sub>IN(min)</sub> = 20 V)		
	L1 [m]	L2 [m]	Quantity of detectors	L1 [m]	L2 [m]	Quantity of detectors
1	48	408	13	34	334	11
	81	411	12	67	337	10
	115	415	11	102	342	9
	153	423	10	141	351	8
	196	436	9	187	367	7
1,5	47	497	16	49	409	13
	79	499	15	82	412	12
	113	503	14	117	417	11
	148	508	13	155	425	10
	187	517	12	198	438	9
	229	529	11	248	458	8
2,5	39	669	22	42	552	18
	72	672	21	74	554	17
	104	674	20	108	557	16
	137	677	19	142	562	15
	172	682	18	179	569	14

**Table 1: Maximum quantity of Alpa EcoTerm XT detectors – open loop configuration**

## 2 Closed loop configuration



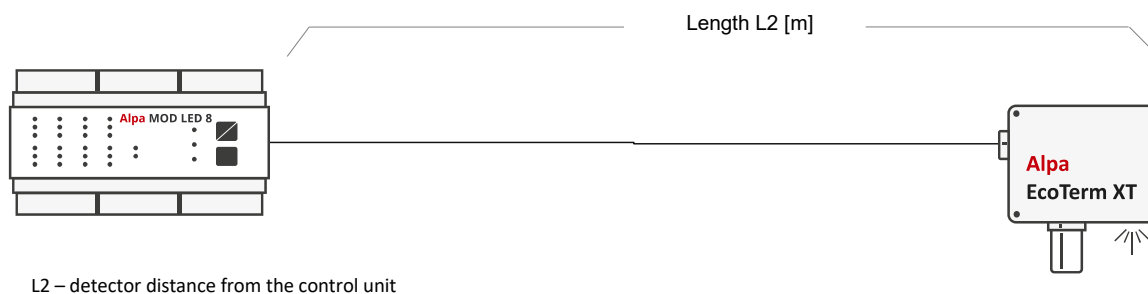
L1 – distance T-connector of the first detector from the control unit  
L2 – distance T-connector of the last detector from the control unit (also the length of loop return cable)

**Figure 2: Closed loop configuration for Alpa EcoTerm XT detectors**

Cross-section of a single cable conductor [mm <sup>2</sup> ]	Alpa EcoTerm XT Gas Detector					
	System without backup battery supply (U <sub>IN</sub> = 24 V)			System with backup battery supply (U <sub>IN(min)</sub> = 20 V)		
	L1 [m]	L2 [m]	Quantity of detectors	L1 [m]	L2 [m]	Quantity of detectors
1	61	541	17	58	448	14
	93	543	16	90	450	13
	128	548	15	127	457	12
	166	556	14	167	467	11
	207	567	13	213	483	10
1,5	56	656	21	33	543	18
	88	658	20	64	544	17
	122	662	19	97	547	16
	157	697	18	132	552	15
	195	705	17	170	560	14
2,5	41	881	29	40	730	24
	72	882	28	72	732	23
	104	884	27	104	734	22
	139	889	26	138	738	21
	171	891	25	174	744	20
	207	897	24	211	751	19

**Table 4: Maximum quantity Alpa EcoTerm XT detectors – closed loop configuration**

### 3 Star configuration



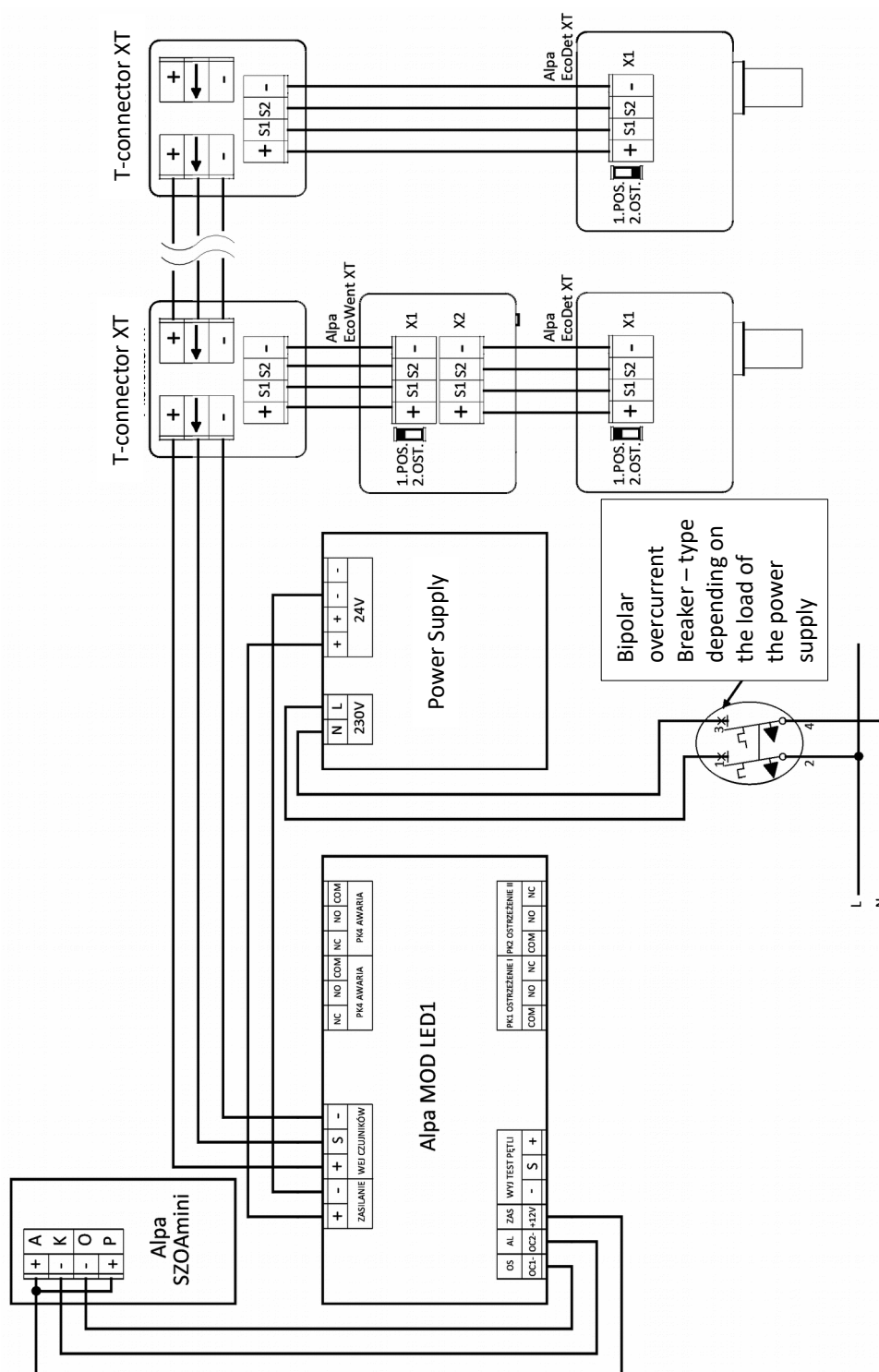
**Figure 3: Star configuration**

Cross-section of a single cable conductor [mm <sup>2</sup> ]	System with backup battery supply ( $U_{IN(min)} = 20\text{ V}$ )	
	One Alpa EcoTerm XT Gas Detector at the end of the line	
	L2 [m]	
1	1400	
1,5	1400	
2,5	1400	

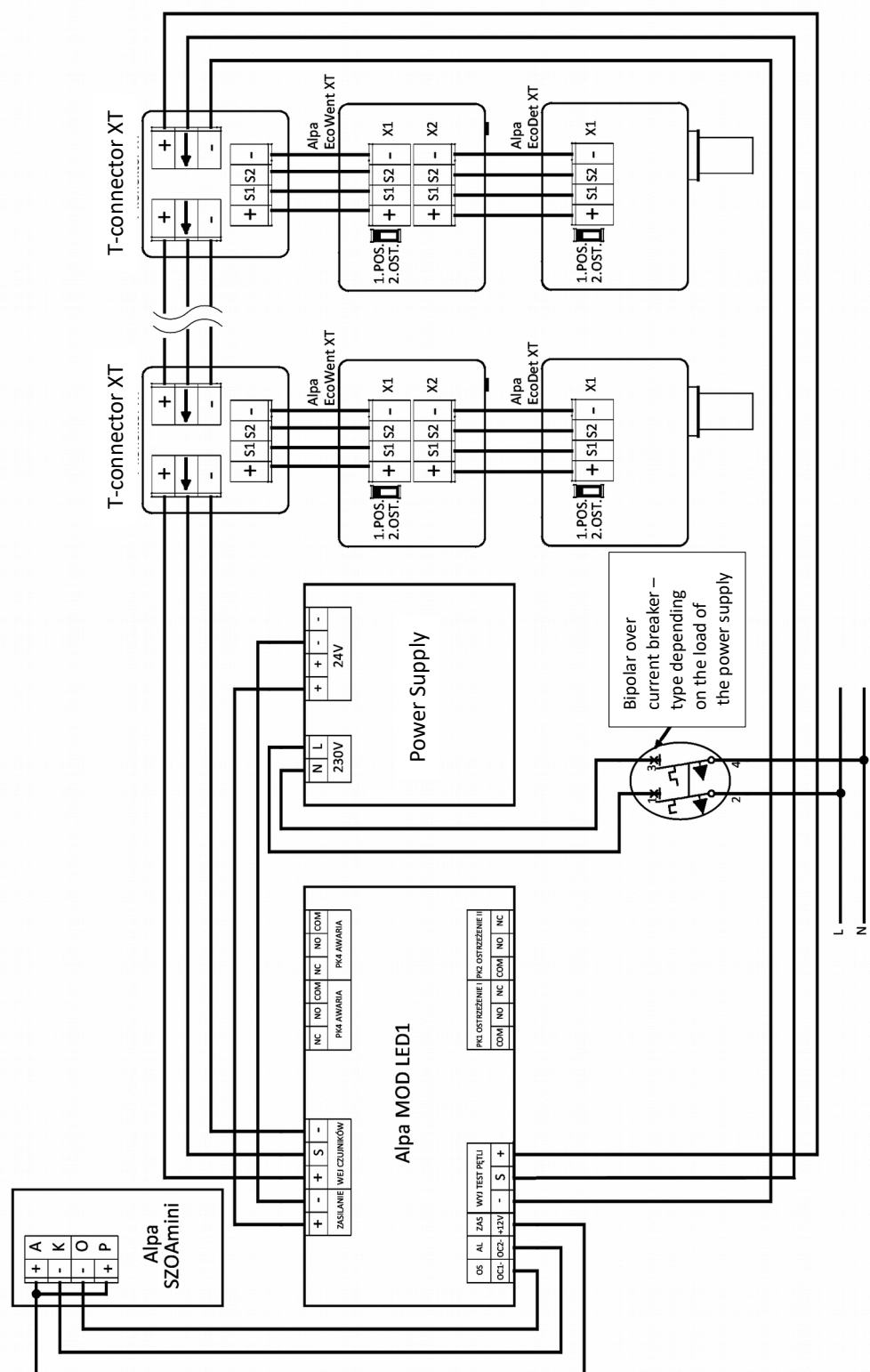
**Table 7: Maximum length of cables – star configuration**



## Connection diagram – an open alarm loop



## Connection diagram – closed alarm loop







**Atest Gaz A. M. Pachole sp. j.**

Spokojna 3, 44-109 Gliwice

tel.: +48 32 238 87 94

fax: +48 32 234 92 71

e-mail: [contact@atestgaz.pl](mailto:contact@atestgaz.pl)

For more details on our devices and other products and services offered by us, visit:

**[www.atestgaz.pl/en](http://www.atestgaz.pl/en)**