



# **AWZ637**

v.1.0

## **Enclosure with power supply unit dedicated to Dahua's Access Control**

EN

Edition: 1 from 15.05.2019  
Supercedes: -----



## Features:

- DC 13,8 V/6 A uninterruptible power supply\*
  - fitting battery: 17 Ah/12 V
  - wide range of mains supply: ~200-240 V
  - high efficiency 80 %
  - battery charging and maintenance control
  - excessive discharging (UVP) protection
  - jumper selectable battery charge current 1 A/2 A
  - battery output full protection against short-circuit and reverse polarity connection
  - enclosure dedicated for Dahua controllers ASC2104B-T, ASC2102B-T (and similar)
  - EPS technical output indicating AC power loss – OC and relay type
  - PSU technical output indicating PSU failure – OC and relay type
  - LoB technical output indicating battery low voltage – OC and relay type
  - protections:
    - SCP short-circuit protection
    - OVP overvoltage protection
    - overvoltage protection
    - against sabotage
    - overload protection (OLP)
- warranty – 2 year from the production date

## CONTENTS:

1. Technical description.
  - 1.1 General description
  - 1.2 Block diagram
  - 1.3 Description of PSU components and connectors.
  - 1.4 Specifications
2. Installation.
  - 2.1 Requirements
  - 2.2 Installation procedure
3. Operating status indication.
  - 3.1 LED indication of operating status
4. Operation and use.
  - 4.1 Overload or short circuit of the PSU output (SCP on)
  - 4.2 Disconnection of discharged battery
  - 4.3 Maintenance

## 1. Technical description.

### 1.1 General description.

A buffer PSU is intended for an uninterrupted supply to devices requiring stabilised voltage of **12 V DC (+/-15 %)**. The PSU provides voltage of **U=13,8 V DC**. Current efficiency:

**1. Output current 6 A + 1 A battery charge\***

**2. Output current 5 A + 2 A battery charge\***

**Total device current + battery: 7 A max .**

In case of power decay, a battery back-up is activated immediately. The PSU is constructed based on the switch mode PSU, with high energy efficiency. The PSU is housed in a metal enclosure (colour RAL 9005) which can accommodate a 17 Ah/12 V battery. A micro switch indicates door opening (front cover). TH35 rail, length of 185 mm, for mounting the controller was installed inside. The PSU has been equipped with a LB4 fuse module to protect the controller outputs.

\* Refer to chart 1

1.2 Block diagram (fig.1)

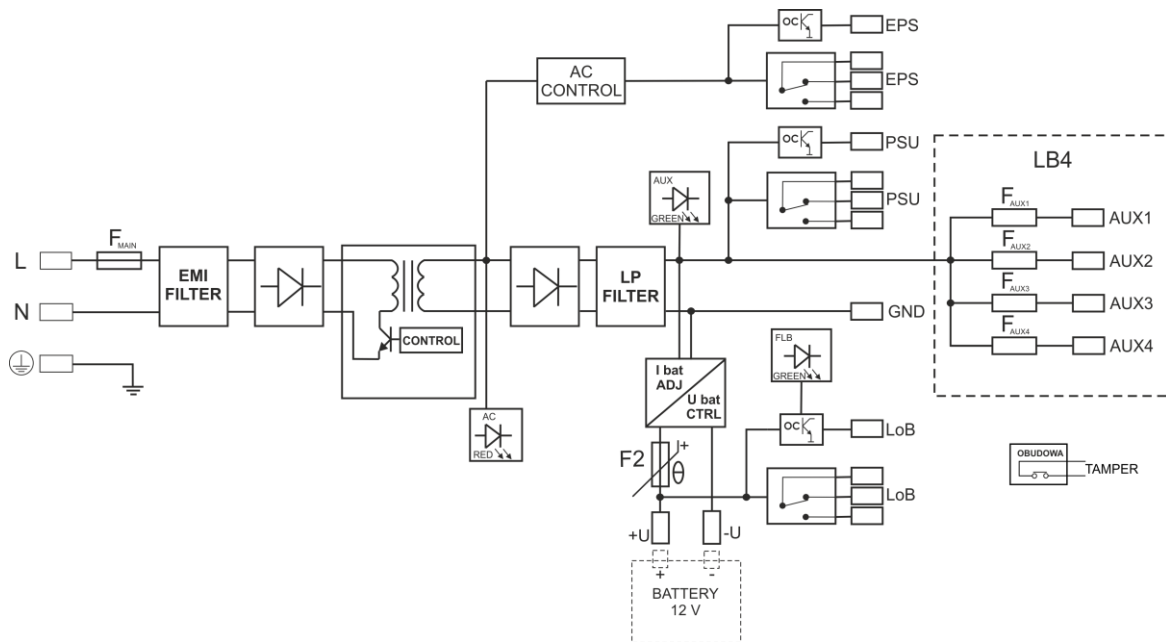
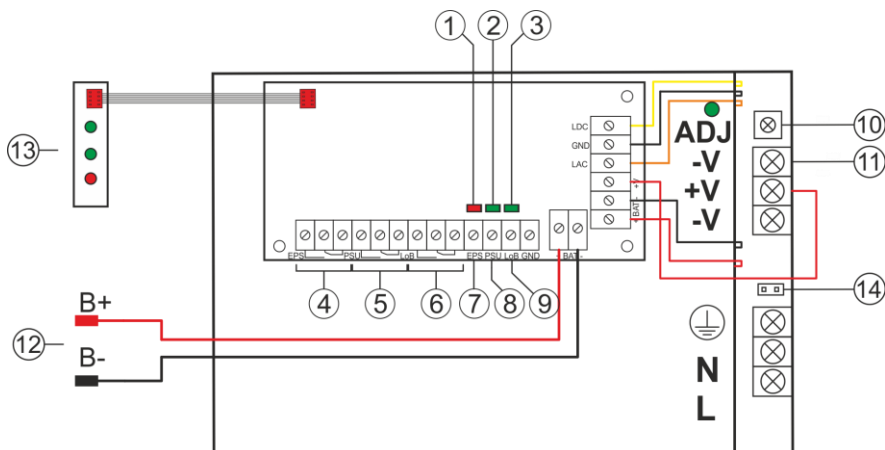



Fig.1. The block diagram of the PSU.

1.3 Description of PSU components and connectors (tab.1, fig.2).

Element no.	Description
[1]	LED indicating presence of AC power
[2]	LED indicating presence of DC power
[3]	LED indicating correct battery voltage
[4]	EPS - AC absence technical output – relay type
[5]	PSU - output indicating DC absence/PSU failure – relay type
[6]	LoB - output indicating battery low voltage – relay type
[7]	EPS - AC absence technical output – OC type
[8]	PSU - output indicating DC absence/PSU failure - OC type
[9]	LoB - output indicating battery low voltage - OC type
[10]	V <sub>ADJ</sub> - potentiometer, DC voltage adjustment
[11]	+V , -V- DC supply output
[12]	Battery connectors: + BAT = red, - BAT = black
[13]	LED indication on the front panel
[14]	Battery charging current selection •  I <sub>bat</sub> =1 A •  I <sub>bat</sub> =2 A Legend:  dip switch installed  dip switch removed

Tab.1. The components of the PSU.



Element [Fig. 2]	Description
[1]	<b>PSU module</b>
[2]	Fitting battery 17 Ah/12 V (SLA)
[3]	<b>TAMPER</b> , contact, sabotage protection (NC)
[4]	L-N 230 V power supply connector, protection connector 
[5]	Power cord for the controller, ended with a DC 2.1 / 5.5 plug
[6]	TH35 rail for mounting the controller (length 185 mm)
[7]	<b>Fuse module LB4</b>

Tab.2. Output terminals of the PSU.

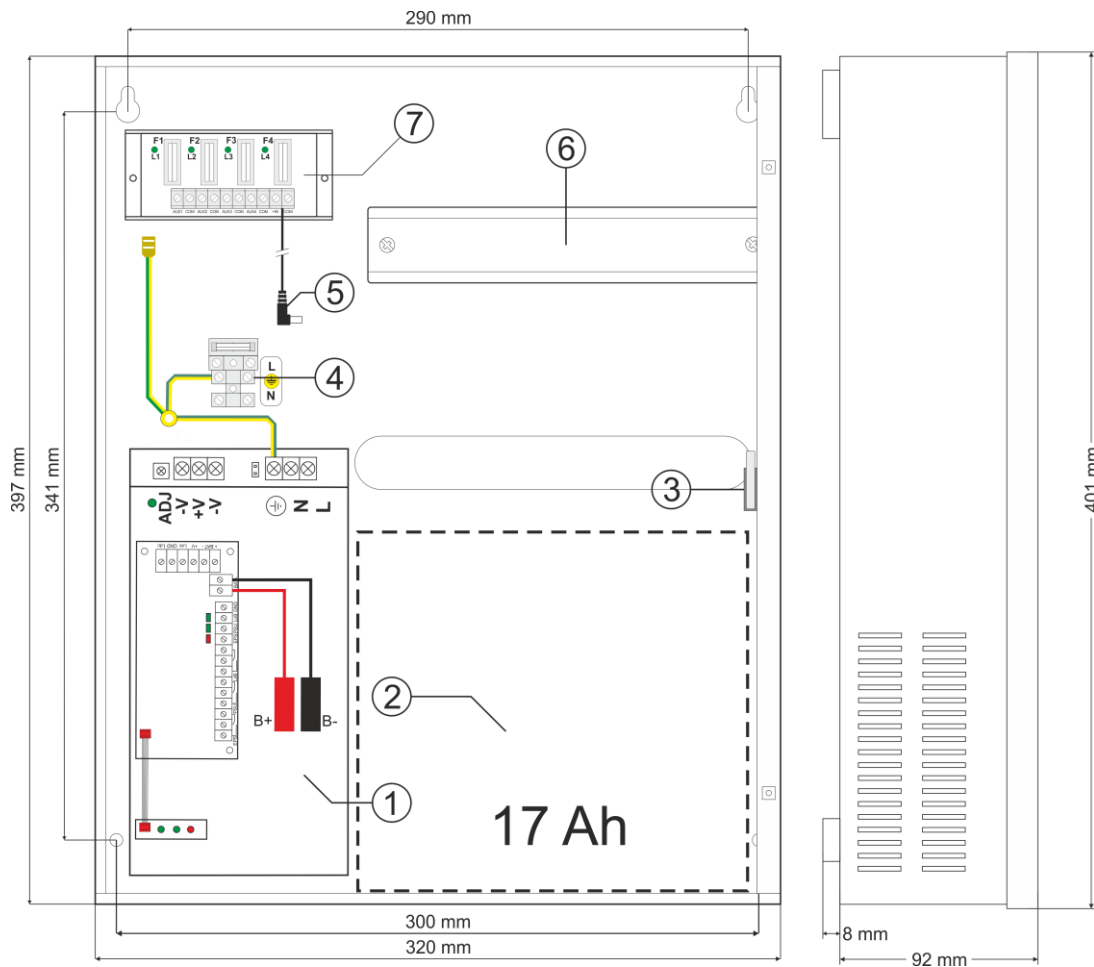


Fig.2. The view of the PSU.

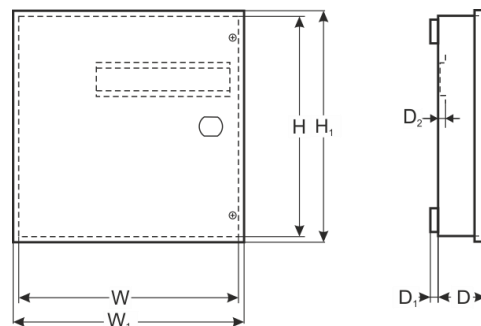
**1.4 Specifications:**

- electrical parameters (tab.3)
- mechanical parameters (tab.4)
- operation safety (tab.5)
- operating parameters (tab.6)

**Electrical parameters (tab. 3)**

PSU type	~200-240 V; 50 Hz
Mains supply	1,1 A
Current up to	100 W max.
Efficiency	80 %
Output voltage	11-13,8 V DC – buffer operation 9,5 V ÷ 13,8 V DC – battery-assisted operation
<b>Output current <math>t_{AMB} &lt; 30\text{ }^{\circ}\text{C}</math></b>	<b>6 A + 1 A battery charge - refer to chart 1</b> <b>5 A + 2 A battery charge - refer to chart 1</b>

<b>Output current <math>t_{AMB}=40\text{ }^{\circ}\text{C}</math></b>	<b>4,9 A + 1 A battery charge - refer to chart 1</b> <b>3,9 A + 2 A battery charge - refer to chart 1</b>
Voltage adjustment range	12±14 V DC
Ripple	120 mV p-p max.
Current consumption by PSU systems	60 mA
Battery charge current	1 A or 2 A max. @ 17 Ah (± 5 %) – jumper selectable
Short-circuit protection SCP	electronic, automatic return
Overload protection OLP	105-150 % of the PSU power, automatic return
Fuses F1 ÷ F4	F1,5 A/ 250 V
Battery circuit protection SCP and reverse polarity connection	glass fuse T8A/250V
Surge protection	varistors
Overvoltage protection OVP	>16 V (automatic recovery)
Excessive discharge protection UVP	$U < 9,5\text{ V}$ (± 5 %) – disconnect of connection battery
Sabotage protection: - TAMPER output indicating enclosure opening	- microswitch, NC contacts (enclosure closed), 0,5 A@50 V DC (max.)
LED indication: - AC diode indicating AC power status - AUX diode indicating DC power status at the PSU output - BAT diode indicating battery voltage level	- red, normal status – on, failure: off - green, normal status – on, failure: off - green, normal status – on, failure: off
Technical outputs: - EPS; output indicating AC power failure  - PSU; output indicating DC absence/PSU failure  - LoB output indicating battery low voltage	- relay type: 1 A@ 30 V DC/50 V AC, time lag: approx. 10s. - OC type, 50mA max., normal status: L (0V) level, failure: hi-Z level, time lag: 10 s.  - relay type: 1 A@ 30 V DC/50 V AC - OC type, 50 mA max., normal status: L (0V) level, failure: hi-Z level  - relay type: 1 A@ 30 V DC/50 V AC - OC type, 50 mA max., normal status: (UBAT >11,5 V): L (0V) level, failure: (UBAT <11,5 V): hi-Z level The power supply unit does not feature a battery detection function.



#### Mechanical parameters (tab. 4)

Dimensions	W=320, H=397, D+D <sub>1</sub> =92+8 [+/- 2 mm] W <sub>1</sub> =325, H <sub>1</sub> =401 [+/- 2 mm] D <sub>2</sub> =18 [+/- 2 mm]
Fitting battery	190 x 170 x 75 mm (WxHxD) max
The number of DIN rails / length / the number of „S” fields	1 / 185 / 10
Fixation	See figure 3
Net/gross weight	3,2 / 3,5 kg
Enclosure	Steel plate DC01, thickness: 0,8 mm, colour: RAL 9005
Closing	Cheese head screw x 2 (at the front), (lock assembly possible)
Connectors	Power supply: $\Phi 0,63$ -2,50 (AWG 22-10) 0,5÷1,5 mm <sup>2</sup> Outputs: $\Phi 0,63$ -2,50 (AWG 22-10), 0,5÷1,5 mm <sup>2</sup> Controller power supply: DC2,1/5,5 plug Battery output BAT: 6,3F-2,5 TAMPER output: wires

Notes	The enclosure does not touch the assembly surface so that cables can be led. Convictional cooling.
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**Operation safety (tab.5)**

Protection class PN-EN 60950-1:2007	I (first)
Protection grade PN-EN 60529: 2002 (U)	IP20
Electrical strength of insulation: - between input and output circuits of the PSU - between input circuit and protection circuit - between output circuit and protection circuit	3000 V AC min. 1500 V AC min. 500 V AC min.
Insulation resistance: - between input circuit and output or protection circuit	100 MΩ, 500 V DC

**Operating parameters (tab.6)**

Operating temperature	-10 °C...+40 °C (see: chart 1)
Storage temperature	-20 °C...+60 °C
Relative humidity	20 %...90 %, without condensation
Vibrations during operation	unacceptable
Impulse waves during operation	unacceptable
Direct insulation	unacceptable
Vibrations and impulse waves during transport	According to PN-83/T-42106

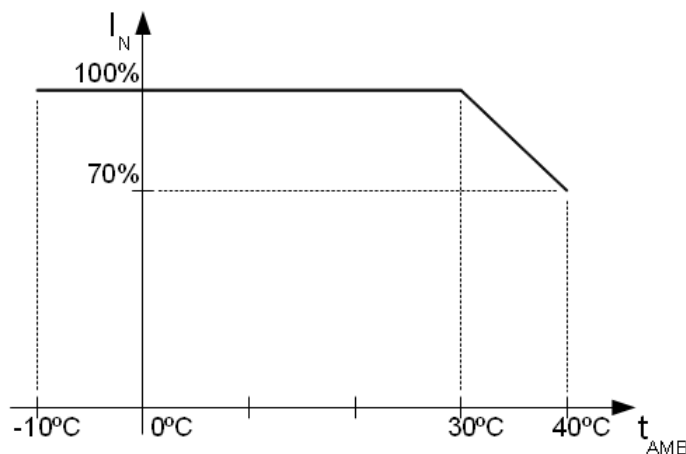


Chart 1. Acceptable output current from the PSU depending on ambient temperature.

**2. Installation.****2.1 Requirements.**

The buffer PSU shall be mounted by a qualified installer with appropriate permissions and qualifications for 230 V installations and low-voltage installations (required and necessary for a given country). The device shall be mounted in confined spaces, according to the environment class II, with normal air humidity (RH=90 % max. without condensation) and the temperature from -10 °C to +40 °C. The PSU shall work in a vertical position that guarantees sufficient convective air-flow through ventilating holes of the enclosure.

**Before installation, prepare a PSU load balance.**

**1. Output current 6 A + 1 A battery charge\***

**2. Output current 5 A + 2 A battery charge\***

**Total device current + battery: 7 A max .**

As the PSU is designed for a continuous operation and is not equipped with a power-switch, therefore an appropriate overload protection shall be guaranteed in the power supply circuit. Moreover, the user shall be informed about the method of unplugging (usually through assigning an appropriate fuse in the fuse-box). The electrical system shall follow valid standards and regulations.



\* Refer to chart 1

## 2.2 Installation procedure.




**Before installation, cut off the voltage in the 230 V power-supply circuit. To switch power off, use an external switch, in which the distance between the contacts of all poles in the disconnection state is not less than 3 mm.**

**It is required to install an installation switch with a nominal current of 6 A in the power supply circuits outside the power supply unit.**

1. Mount the PSU in a selected location and connect the wires.
2. Connect the ground wire to the terminal marked by the earth symbol  (power supply module connector). Use a three-core cable (with a yellow and green  protection wire) to make the connection. Lead the cables to the appropriate terminals of the connection board through the insulating bushing.



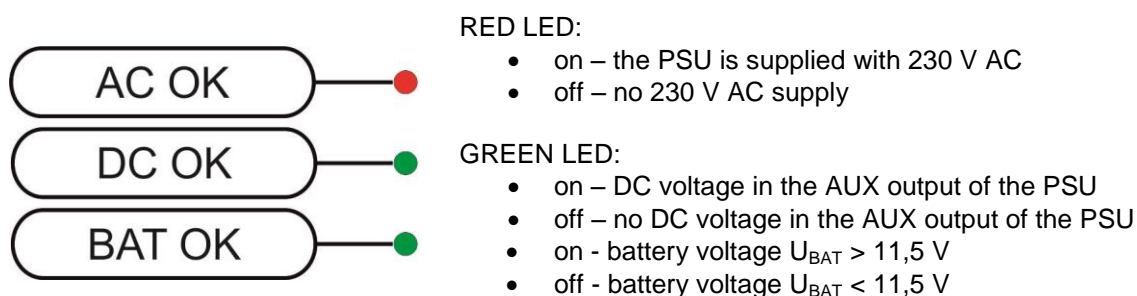
**The shock protection circuit shall be performed with a particular care, i.e. the yellow and green wire coat of the power cable shall stick to one side of the terminal - marked with  symbol on the PSU enclosure. Operation of the PSU without the properly made and fully operational shock protection circuit is UNACCEPTABLE! It can cause a device failure or an electric shock.**

3. Connect the controller to wire with DC plug
4. Connect the receivers' wires to the AUX and COM connectors of the fuse module. If necessary, the values of fuses in the LB4 module can be selected, but 1.5 A should not be exceeded.
5. Connect the power (~230 V)
6. Connect the battery (mind the colours):
  - battery output (+V): BAT+ cable / red,
  - battery output (0V): BAT – cable / GND / black.
7. Check the PSU operation indicator: green LED.
8. Check the PSU output voltage:
  - the PSU voltage without load should amount to  $U=13,8$  V DC.
9. After installing and checking proper working, the enclosure can be closed.

## 3. Operating status indication.

### 3.1 LED indication of operating status.

The PSU is equipped with two diodes on the front panel:



Moreover, the PSU is equipped with 3 LEDs on the PCB board:

- red LED (Fig.2, element 1) normal status (AC power): permanently illuminated. AC power absence is indicated by the AC diode going out.

Caution! LED indicates power absence if the outage lasts >10 s.

- green LED (Fig.2, element 2) indicates DC power at the PSU output. Under normal status the diode is permanently illuminated. In case of a short circuit or an overload, the diode is off.

- green LED (Fig.2, element 3) indicates battery voltage level. Under normal status ( $U_{BAT} > 11,5$  V) the diode is permanently illuminated. In case of decrease of battery voltage ( $U_{BAT} < 11,5$  V) the diode is off.

### 3.2 Technical outputs

The PSU has indication outputs:

- **EPS - absence of AC supply output:**

- OC type output that indicates AC power loss. Under normal status, with 230 V supply, the output is connected to ground (L level – 0V). In case of power loss, the PSU will switch the output into high impedance state hi-Z after approx. 10s.
- relay output indicating the absence of AC supply. In case of power loss, the PSU module will switch the relay contacts after approx. 10 seconds.



**CAUTION!** In Fig.2. the contact set in the potential-free status corresponds to a state with no AC power (AC power failure).

- **PSU – technical output indicating absence of DC voltage at the PSU:**

- OC type output indicating the PSU failure. In normal state (during correct operation) the output is connected to ground (L level – 0V). In case of absence of DC voltage at the output (e.g. short circuit), the output is switched into high impedance state – hi-Z.
- relay output. In case of a failure, the contacts of the relay change over.



**CAUTION!** In the Fig.2. the set of contacts shows a potential-free status of the relay which corresponds to a state with no DC power (PSU failure).

- **LoB – technical output indicating battery voltage:**

- OC type output. Under normal status ( $U_{BAT} > 11,5 \text{ V}$ ) the output is connected to ground (L level – 0V). In case of decrease of battery voltage ( $U_{BAT} < 11,5 \text{ V}$ ) the output is switched into high impedance state – hi-Z.
  - relay output. In case of a battery voltage drop  $U_{BAT} < 11,5 \text{ V}$ , the contacts of the relay change over.
- The power supply unit does not feature a battery detection function. In the case of no battery or non battery connected, the output is in the normal mode.



**CAUTION!** In the Fig.2. the set of contacts shows a potential-free status of the relay which corresponds to a state with low battery level ( $U_{BAT} < 11,5 \text{ V}$ ).

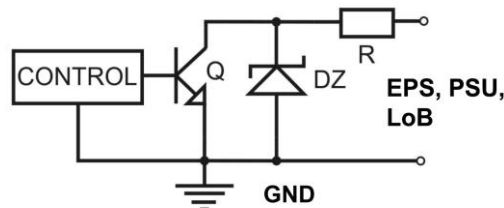


Fig. 4. Electrical diagram of OC outputs.

## 4. Operation and use.

### 4.1 Overload or short circuit of the PSU output (SCP on)

In case of overload, the output voltage is automatically shut off, and so is the LED indicator. The restoration of the voltage takes place immediately after the failure (overload) is over.

### 4.2 Battery-assisted operation.

In case of a main power outage, the device is immediately switched into a battery-assisted operation.



**The PSU is equipped with the discharged battery disconnection system. During the battery-assisted operation, reducing voltage below 9,5 V at the battery terminals will cause battery disconnection.**



### 4.3 Maintenance.

Any and all maintenance operations may be performed following the disconnection of the PSU from the power supply network. The PSU does not require performing any specific maintenance measures, however, in case of significant dust rate, its interior is recommended to be cleaned with compressed air. In case of fuse replacement, use a replacement of the same parameters.



#### WEEE LABEL

**Waste electrical and electronic equipment must not be disposed of with normal household waste. According to the European Union WEEE Directive, waste electrical and electronic equipment should be disposed of separately from normal household waste.**

**CAUTION!** *The power supply unit is adapted for cooperation with the sealed lead-acid batteries (SLA). After the operation period they must not be thrown but recycled according to the applicable law.*

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