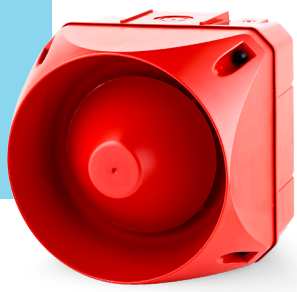
Auer Signal



Selecting Signaling Devices

Specifications to consider when selecting beacons and alarms for industrial use

sprecher+schuh

Table of Contents

Introduction **3**

Degrees of protection **3**

Standards and certification marks **5**

- UL certification 5
- CE Marking 6
- ATEX 6
- AS Interface 6

Differences in Visual Signaling **6**

- Beacon Type 6
- Color 7
- Luminous Intensity 8
- Light Source 8

Audible Signaling Equipment **10**

- Volume 10
- Tone & Frequency 11
- Tone Tables 13

Conclusion **13**

About Auer Signal **14**

Introduction

From the buzzer on an oven indicating the bread is ready, to the siren alarm in a mine warning of an imminent explosion, signaling devices are everywhere. Signaling devices are subject to the same specifications and requirements as many other industrial products incorporated into machinery and safety devices. However, the signaling industry has standardized on colors and types of sound. Specific selections of colors indicate common sense actions. A wide range of sounds can indicate an equally wide range of alerts. How to select the right signaling device for your specific application starts with a few simple questions.

- What degree of dust and water protection do you need?
- What industrial certifications are required?
- What brightness, signaling effect and visual distance is needed?
- Is sound needed? What audible signaling is sufficient without causing physical damage?

By clearly defining the requirements and application, the best signaling solution can be found.

Degrees of protection

The degrees of protection set out by standard EN 60529 provide information about the level to which electrical equipment – in our case signalling devices – is protected against the effects of solid foreign objects and against the ingress of liquid by the casing or covers.

The degrees of protection are indicated by a code which always consists of the two letters ‘IP’ plus two numbers that represent the level of protection. The most common degrees of protection given to Auer Signal products are IP 65, IP 66 and IP 67.

Table 1 provides an overview of what the IP degree of protection numbers mean and how they are put together:

Table 1: EN 60529 Degrees of Protection

First number
Protection against foreign objects

0	**No Protection** No special protection stopping people directly touching active or moving parts; no protection for the equipment against the ingress of solid foreign objects
1	**Protection against large foreign objects** Protection against the ingress of solid foreign objects with a diameter of more than 50 mm, e.g. hands
2	**Protection against medium-sized foreign objects** Protection against the ingress of solid foreign objects with a diameter of more than 12 mm, e.g. fingers
3	**Protection against small foreign objects** Protection against the ingress of solid foreign objects with a diameter of 2.5 mm, e.g. tools, wires
4	**Protection against granular foreign objects** Protection against the ingress of solid foreign objects with a diameter of more than 1 mm, e.g. fine tools, small wires
5	**Protection against dust deposits** Fully protected against dust deposits: The ingress of dust is not completely ruled out, but does not impair the functionality of the device
6	**Protection against ingress of dust** Fully protected against the ingress of dust

Second number
Protection against liquid

0	**No Special Protection**
1	**Protection against dripping water – falling vertically** Dripping water falling vertically should not have a harmful effect
2	**Protection against dripping water – falling at an angle** Dripping water falling at any angle up to 15 degrees to the vertical should not have a harmful effect.
3	**Protection against spraying water** Dripping water falling at any angle up to 60 degrees to the vertical should not have a harmful effect
4	**Protection against splashing water** Water splashing against the equipment from all directions should not have a harmful effect
5	**Protection against water jets** A jet of water from any direction should not have a harmful effect
6	**Protection against flooding** Water from heavy seas or water projected in powerful jets shall not enter the enclosure in harmful quantities
7	**Protection in the event of immersion** A harmful amount of water should not enter the equipment when it is immersed in water under the specified pressure and time conditions
8	**Protection in the event of deep immersion** A harmful amount of water should not enter the equipment when it is immersed under water

Standards and certification marks

UL certification

Given that Auer Signal has a global market presence, the majority of the company's signalling equipment is also certified in line with UL standards.

Plus, as a member of the 'Client Test Data Program', Auer Signal is also authorized to conduct UL-related tests in its own laboratory. UL accepts the results of such tests on a provisional basis, but then periodically repeats the tests to check the quality of the results.

UL is the locally established certification for devices specifically in the US market. Although UL certification is not a fixed requirement in particular outside of America, a user of a device with UL certification can be sure that it meets incredibly stringent safety standards because UL has a stronger focus on safety-related aspects than European standards.

As part of UL certification, devices have to be tested by qualified testers, and inspectors are sent out to device manufacturers four times a year under the scope of follow-up services to ensure that the prescribed manufacturing methods and material specifications are being upheld. If the UL mark is preceded by the letter C, it indicates that the device has also been tested in line with the standards set out by the CSA (Canadian Standards Association) and has also been certified for use in Canada.

Table 2: Device classifications according to UL:

Type 1	Indoor use primarily to provide protection against contact with the enclosed equipment and against a limited amount of falling dust/dirt
Type 2	Indoor use to provide a degree of protection against a limited amount of water and dust
Type 3	Outdoor use to provide a degree of protection against windblown dust and rain; the device is undamaged by the formation of ice on the enclosure
Type 3R	Outdoor use to provide a degree of protection against rain; the device is undamaged by the formation of ice on the enclosure
Type 4	Either indoor or outdoor use to provide a degree of protection against rain, splashing water and hose-directed water; the device is undamaged by the formation of ice on the enclosure
Type 4X	Either indoor or outdoor use to provide a degree of protection against rain, splashing water and hose-directed water; the device is undamaged by the formation of ice on the enclosure; resists corrosion
Type 6	Indoor or outdoor use to provide a degree of protection against entry of water during temporary submersion/flooding at a limited depth; the device is undamaged by the external formation of ice on the enclosure
Type 12	Indoor use to provide a degree of protection against dust, dirt, fibre flyings, dripping water and external condensation of non-corrosive liquids
Type 13	Indoor use to provide a degree of protection against lint, dust seepage, external condensation and spraying of water, oil and non-corrosive liquids

CE Marking

The CE marking is the manufacturer's declaration – in the form of a conformity declaration – that the product meets all of the applicable European directives and the safety requirements contained within them.

ATEX

The ATEX logo indicates that a product is permitted for use in potentially explosive atmospheres in accordance with the European ATEX Directive. The product itself has a test number and detailed information about the certification on its label.

AS Interface

The AS-INTERFACE logo shows that a product can be integrated into an AS-Interface fieldbus system.

Other industrial standards can be met. Check with the manufacturer to see if they will test to specific industry's standards.

Differences in Visual Signaling

Visual signaling equipment differs in signaling effect (or beacon type), color, and luminous intensity

Beacon Type

In the field of signalling technology, there are four types of beacons, which each have differing levels of signalling effects.

Strobe beacons
Strobe beacons emit an intense light pulse by flashing very quickly at intervals of milliseconds. This light pulse achieves the best signalling effect and attracts maximum attention.

- Xenon strobe beacon
  The xenon strobe beacon stores electrical energy in a capacitor and pushes it out through a xenon flashtube in bursts, which generates the light pulse.
- LED Strobe/Multi-Strobe Beacon
  Auer Signal is one of the few suppliers of innovative LED multi strobe beacons. These LED strobe/multi strobe beacons use state-of-the-art high-power LEDs as the light source.

  Although an LED multi strobe beacon does not emit the same amount of light as a xenon strobe beacon at the peaks, it can compensate for the lower light output with a sequence of light pulses, which attract much more attention. The LED multi strobe beacon is therefore able to match the excellent signalling effect.

  Unlike xenon strobe beacons, LED strobe/multi strobe beacons afford all of the advantages of LED technology, which include a very long service life, much greater efficiency and unparalleled resistance to vibrations.

Using Fresnel lenses means that the light point in a beacon is distributed across the full height of the lens, creating an optimal signalling effect and good side emission.

Most rotating mirror beacons feature smooth lenses to ensure that an optimal signalling effect can be achieved.

Rotating mirror beacons
In rotating mirror beacons, the light source is surrounded by a hemispherical mirror, which focuses the light point in a certain direction as it rotates, creating a rotating beam of light that attracts a lot of attention. The signalling effect can be improved even further by adjusting the speed of rotation.

Flashing beacons
Flashing beacons attract attention by the light source being switched on and off periodically. Given that flashing light stimuli are more clearly visible than those that are constantly on, they are ideal for applications for which the extreme warning effect of a strobe beacon is unnecessary yet good visibility is still required. The flash frequency of flashing beacons is usually 1–2 Hz.

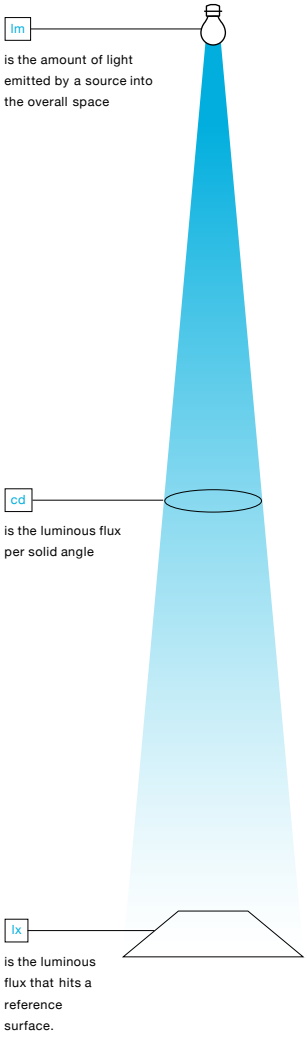
Steady beacons
Steady beacons emit a constant light signal and possess the weakest signalling effect of all of the visual signalling equipment. Steady beacons are put to use in situations where only low-threshold signal pulses are required or an information signal needs to be emitted.

Color

Table 3 shows the general meanings allocated to colors of signalling equipment. Light transmission is reduced in some cases compared to the clear lens due to the use of different lens colors.

Table 3: Beacon colors and common meanings

	**RED - Emergency** • Emergency, hazardous or dangerous situation • Immediate Action	Reduction of the light transmission at Halogen: –70 %, Xenon: –87 %
	**BLUE - Specific Action** • Indication of a situation that requires a specific action to be taken by the operator • Mandatory Action	Reduction of the light transmission at Halogen: –88 %, Xenon: –83 %
	**YELLOW or AMBER - Abnormal Situation** • Imminent critical situation • Monitoring and/or action required	Reduction of the light transmission at Yellow: Halogen: –1 %, Xenon: –9 % Orange: Halogen: –28 %, Xenon: –46 %
	**CLEAR - Neutral** • No special meaning – to be used for other situations when there is any doubt about the use of red, yellow, green or blue • Monitoring	Reduction of the light transmission at Halogen: 0 %, Xenon: 0 %
	**GREEN - Normal Situation** • Normal Situation • No action required	Reduction of the light transmission at Halogen: –85 %, Xenon: –55 %



Luminous Intensity

In the field of signalling technology, there are different basic quantities that are used to evaluate light. The main standard units of measurement are lumen, candela and lux.

LUMEN [Lm] – luminous flux
Luminous flux is a measure of the total visible light emitted by a light source. It expresses how much light is emitted by a light source in all directions. This value is weighted according to human spectral perception. Luminous flux is an excellent way of expressing how effective a light source is.

CANDELA [cd] – luminous intensity
Luminous intensity expresses the light emitted in a certain direction. As the emission characteristics of visual signalling equipment are determined by the design of the lenses as well as by the light source, luminous intensity is ideally used to characterize the signalling effect of visual signalling equipment.

$$\text{luminous intensity [cd]} = \frac{\text{luminous flux [lm]}}{\text{Solid angle [sr]}}$$

Luminous intensity is therefore a measure of the spatial distribution of the luminous flux. The technical definition of a candela is the luminous intensity of a light source that emits monochromatic radiation that has a frequency of 540 x 106 Hz (corresponding to a wavelength of 555 nm) and an intensity of 1/683 W per steradian. A standard candle emits light with a luminous intensity of 1 cd, which means it emits 12.556 lm in all directions.

Lux [LX] - illuminance
Illuminance is a measure of the brightness with which a surface is illuminated. Illuminance expresses the amount of luminous flux from a light source that is incident on a receiving area per area unit.

$$\text{Lux [lx]} = \frac{\text{Luminous flux [lm]}}{\text{Area [m2]}}$$

Light Source

The luminous intensity depends greatly on the light source used.

LED
LEDs (light-emitting diodes) are optical semiconductors that convert electric voltage into visible light. LEDs have a very long service life, which is generally specified as more than 100,000 hours, equating to a continuous burn time of 12 years. After that point, however, LEDs do not stop working entirely and instead the light they emit will be reduced by around 30% compared to the usual luminous flux. The light emission merely decreases. Besides the service life, the other main selling points of LEDs are the fact that they require no maintenance, their resistance to vibrations and impact, and their low energy consumption.

HIGH POWER LED by AUER Signal
For those special applications that require exceptionally good brightness, Auer Signal offers high-power LEDs and high-performance beacons alongside its standard LEDs. These products have been developed specifically to achieve maximum light output.

Owing to the increased output that is within the limits of the LEDs' capabilities, the high-power LEDs require more power and generate more heat than standard LEDs. As a result, the service life of a high-performance beacon is restricted to around 30,000 hours. However, when power and high

performance are essential, the reduced service life of four years is a small price to pay.

LEDs of the High Power NES-HP beacon

Within the scope of the products developed by Auer Signal, the high-power LEDs are combined with lenses with a special optical design. Thanks to this combination of high-power LEDs and visually perfect lenses (refraction), signalling equipment from Auer Signal provides maximum light output and signalling effect. This can be seen in the 90 mm N series beacons and the Q series beacons, for example.

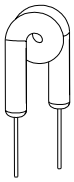
ADVANTAGES

- High light output - high-power LEDs: up to 200 lm/W, standard LEDs: up to 50 lm/W
- LED brightness is reduced only very slightly with coloured lenses as a result of narrow spectrum
- Low energy consumption
- Very long service life - up to 100,000 hours
- Full resistance to vibrations, impact, shocks, etc.
- Completely maintenance-free
- Small dimensions
- Light up instantaneously and service life not reduced as a result of switching on/off
- Low heat generation
- No 'flickering' as with fluorescent tube lighting

DISADVANTAGES

- Higher initial outlay
- Smaller solid angle with same luminous flux (this is actually desirable for some applications)

Xenon flashtube



up to 100 lm/W

By applying a sufficiently high voltage in a bulb filled with the noble gas xenon, a very intense light pulse or flash of light is generated as a result of sudden discharge. Xenon beacons are still used in any situation that requires the brightest of light signals. No other type of beacon can compete with the absolute luminous intensity of a xenon beacon.

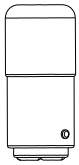
ADVANTAGES

- Good signalling effect thanks to intense light pulse

DISADVANTAGES

- Inside of flashtube turns black over time and light output is reduced
- Service life reduced by high current density and electrodes being charged as a result or by degeneration of energy store
- Service life reduced by vibrations and impact

Incandescent bulbs



up to 18 lm/W

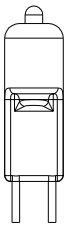
A filament of tungsten wire is heated to a high temperature, which causes it to emit energy across a wide wavelength range, including in the visible range. Incandescent bulbs are now mainly used when low maintenance is an important factor and when the initial outlay is more of a concern than energy consumption.

ADVANTAGES

- Most simple and cost-effective light source
- Available in a wide range of shapes, voltages and outputs

DISADVANTAGES

- Low light output: 8-18 lm/W
- Limited service life: approx. 1,000 h for standard bulbs
- Service life reduced significantly by vibrations, impact, flashing operation, etc.
- Blackening of bulb over time
- 'Yellowish' light
- Relatively high loss of light energy when coloured lenses penetrated
- Lots of maintenance required as bulb has to be replaced on a regular basis



up to 25 lm/W

Halogen bulb

Halogen bulbs follow the same basic technology as incandescent bulbs. The difference is that energy is emitted as a result of halogens being heated to a high temperature rather than a tungsten wire.

ADVANTAGES

- Higher light output than incandescent bulbs: up to 25 lm/W
- Longer service life (about double that of incandescent bulbs)
- Little blackening of bulb - same luminous flux throughout the entire service life

DISADVANTAGES

- Limited service life: approx. 1,500-3,000 h
- Service life reduced by vibrations, impact, etc.
- Service life reduced by flashing operation (current spike caused by switching)
- Relatively high loss of light energy when coloured lenses penetrated

Audible Signaling Equipment

Audible signalling equipment differs in its volume, tone and frequency. In industry, international safety standards regulate the appropriate installation of audible signalling equipment. These standards set out the requirements and areas of application of audible signalling equipment.

The sound pressure level of an audible signalling device must be at least 15 dB higher than the ambient sound level. The frequency at which the signal is loudest must differ as much as possible from the frequency of the ambient sound. The tone frequency of the audible signalling device must be between 300 and 3000 Hz.

How effective an audible signalling device is will depend on:

- The sound pressure level in decibels (dB)
- The tone frequency in hertz (Hz)
- The distance between the signalling device and the receiver
- The influence of other sources of interference and ambient noise

The quantifiable factors, such as the sound pressure in decibels (dB) and tone frequency in hertz (Hz), are disclosed for all audible signalling equipment from Auer Signal. The sound pressure level specified for Auer Signal audible devices will have been measured in an anechoic chamber at a distance of 1 m.

Volume

The volume of an audible sound or signal is relative. Although an increase in the sound pressure of 3 dB means that the sound energy has doubled, the human ear only senses that the volume has doubled when there has been an increase of 10 dB. Our sense of hearing can therefore be said to work on a logarithmic scale.

As well as the absolute volume of a signal, the perceived volume is also determined by the distance between the sounder and the person. When this distance is doubled, this equates to a 6 dB decrease in the sound pressure. The signal is then perceived to be about 25% quieter. Table 4 can be used as a basis for estimating the sound level.

These values only serve as a guideline, however, as environmental factors such as wind speed, wind direction, humidity and weather conditions do also have an effect on audible signals.

Table 4: When the distance is doubled, the sound pressure drops by 6 dB

Distance(m)	Sound pressure level dB (A)																				
1	65	70	75	80	85	90	92	94	96	98	100	102	104	106	108	110	112	114	116	118	120
2	59	64	69	74	79	84	86	88	90	92	94	96	98	100	102	104	106	108	110	112	114
3	55	60	65	70	75	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
5	51	56	61	66	71	76	78	80	82	84	86	88	90	92	94	96	98	100	102	104	106
10	45	50	55	60	65	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	100
20	39	44	49	54	59	64	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94
30	35	40	45	50	55	60	62	64	66	68	70	72	74	76	78	80	82	84	86	88	90
50		36	41	46	51	56	58	60	62	64	66	68	70	72	74	76	78	80	82	84	86
100				40	45	50	52	54	56	58	60	62	64	66	68	70	72	74	76	78	80
200					39	44	46	48	50	52	54	56	58	60	62	64	66	68	70	72	74
500							38	40	42	44	46	48	50	52	54	56	58	60	62	64	66

Talking: 50 dB

Jet: 120 dB

Pain threshold: 130 dB

Tone & Frequency

Audible signalling equipment produces different tones at different frequencies.

Electronic sounders and multi-tone alarm sounders
In electronic sounders from Auer Signal, the audible signal is generated electronically by a microprocessor, before being enhanced and then emitted by a loudspeaker. In smaller devices, sound capsules are used as loudspeakers, whilst pressure chamber or traditional loudspeakers are deployed in more powerful devices.

Given that the audible signal is generated electronically, electronic sounders from Auer Signal can produce a wide range of different tones and frequencies. The advantage of this is that there is a huge choice of tones available, meaning that several clearly distinguishable signals can be assigned to different meanings or areas of application. There is also the option of implementing special customer-specific solutions for tones.

As well as the tone, the volume of the electronic sounders/multi-tone alarm sounders can also be individually adjusted in the majority of the devices supplied by Auer Signal.

Piezo buzzers
Piezoelectric crystals change shape when voltage is applied. Use is made of this property, with piezoelectric crystals being attached to a brass disc and voltage being applied at short intervals. This causes the crystal to vibrate against the disc and generate noise, with frequencies of up to 4000 Hz being reached.

If a special design measure based on the resonance principle is taken, extremely high sound pressures can be reached using this method.

Piezo buzzers afford the advantage that extremely high sound pressure levels can be produced despite a compact design, low energy consumption and relatively cost-effective price.

Examples of electronic alarms, sounders and piezo buzzers by Auer Signal

Electromechanical horns and bells

Electromechanical horns and bells are classic forms of audible signalling equipment. As their name suggests, they generate signals mechanically.

In the case of the horn, the magnetic force of a coil moves a clapper, which strikes a metallic membrane at a frequency of 100 to 150 Hz, generating the typical low-frequency, easily recognizable horn tone.

In the case of the bell, a clapper strikes a bell dome and creates the typical, distinctive bell tone that cannot be reproduced electronically with the same level of sound quality.

Examples of electronic alarms, sounders and piezo buzzers by Auer Signal

Tone Tables

Different manufacturers offer different methods for showing the available tones for their products. Table 5 and 6 are examples.

Table 5: Auer Signal ASM Tone table

STAGE 1 S1	Tone type	Frequency Hz	Pictogram	Repeat rate	Specific application	max dB	STAGE 2 S2	STAGE 3 S3
Tone 01	continuous	660			Swedish Alarm	108	Tone 16	Tone 12
Tone 02	continuous	1000			PFEER toxic gas	109	Tone 16	Tone 25
Tone 03	continuous	2400				113	Tone 21	Tone 17
Tone 04	intermittent	420		0,625 s on / 0,625 s off	Australian alert AS1670	105	Tone 21	Tone 01
Tone 05	intermittent	660		1,8 s on / 1,8 s off	Swedish Alarm	107	Tone 21	Tone 01
Tone 06	intermittent	660		0,15 s on / 0,15 s off	Swedish Alarm	107	Tone 16	Tone 01
Tone 07	intermittent	970		1 s on, 1 s off	PFEER Alarm, BS5839-1:2002	109	Tone 18	Tone 01
Tone 08	intermittent	970 (950)		0,5 s on/0,5 s off x 3 dann 1,5 s off	ISO 8201 low tone, US Temporal	109	Tone 16	Tone 03
Tone 09	intermittent	800		0,25 s on / 1 s off	Swedish Alarm SS 031711	107	Tone 27	Tone 03
Tone 10	intermittent	700		0,15 s on / 0,15 s off, total 1 min.	Industrial alarm Germany	107	Tone 18	Tone 02
Tone 11	intermittent	720		0,7 s on / 0,3 s off		108	Tone 02	Tone 29
Tone 12	intermittent	2400		0,5 s on / 0,5 s off	ISO 8201 high tone, US Temporal	113	Tone 03	Tone 01
Tone 13	intermittent	2850		0,5 s on / 0,5 s off x 3 dann 1,5 s off	AFNOR France, NFS 32-001	110	Tone 03	Tone 17
Tone 14	alternating	440 - 554		0,4 s (440Hz) / 0,1 s (554Hz)	Swedish Alarm	106	Tone 16	Tone 01
Tone 15	alternating	554 - 440		1 Hz		106	Tone 01	Tone 16
Tone 16	alternating	800 - 1000		2 Hz		109	Tone 02	Tone 09
Tone 17	alternating	2400 - 2900		2 Hz		113	Tone 03	Tone 01
Tone 18	alternating	1000 - 2000		1 Hz	Singapore	110	Tone 02	Tone 03
Tone 19	sweeping	500 - 1500		10 Hz		109	Tone 02	Tone 01
Tone 20	sweeping	150 - 1000		rising 10 s, 40 s on, falling 10 s	Industrial alarm Germany	109	Tone 01	Tone 29
Tone 21	continuous	400		simulated Horn		104	Tone 16	Tone 02
Tone 22	sweeping	500 - 1200		rising in 3,75 s/ 0,25 s off	Australian evacuation AS 2220	109	Tone 02	Tone 09
Tone 23	sweeping	500 - 1200		rising in 3,5 s/ 0,5 s off	Netherlands NEN 2575:2000	109	Tone 02	Tone 09
Tone 24	sweeping	500 - 1200		0,5 s on/0,5 s off x 3 / 1,5 s off	Australian evacuation AS1670	109	Tone 02	Tone 09
Tone 25	abfallend	1200 - 500		1 Hz	German evacuation DIN 33404-3	109	Tone 02	Tone 32
Tone 26	sweeping	500 - 1200		0,3 Hz		109	Tone 01	Tone 32
Tone 27	sweeping	1400 - 1600		rising in 1 s/falling in 0,5 s	NFC 48-265	111	Tone 02	Tone 09
Tone 28	sweeping	2400 - 2900		1 Hz		113	Tone 17	Tone 03
Tone 29	bell					109	Tone 16	Tone 02
Tone 30	slow rise	500 - 2400		siren rising 3 s, then continuous 2400 Hz		113	Tone 16	Tone 01
Tone 31	slow rise	300 - 1200		siren rising 3 s, then continuous 1200 Hz		110	Tone 16	Tone 01
Tone 32	chime	970 - 800		repeating ding-dong, 1 Hz		109	Tone 29	Tone 01

Table 6: Piezzo buzzer ESG Tone Table

Tone on terminal			
La	N	Lb	
X	X		pulsing tone
	X	X	wobble tone
X	X	X	continuous tone

Conclusion

By defining the degree of protection needed, the visual or audible needs of the device and the industrial standards to be met, signaling devices can be used for almost any application.

About Auer Signal

Auer Signal is one of the world's leading manufacturers of signalling equipment and is present in over 70 countries. Our products are planned, constructed and tested by our development teams. Innumerable test steps ensure the best product quality. Made in Austria: Auer Signal products stand out from the crowd thanks to their innovative in-depth solutions and ingenious engineering.

From planning to construction, our products are developed in-house. We use the latest industrial manufacturing machines and employ innovative IT solutions to constantly optimize our production processes. Our signalling equipment is produced to the highest industrial quality and meets all the current industry standards.

Products of the highest quality
Our modular signal towers are manufactured with unrivalled precision and guarantee the unique position of our company thanks to innovative in-depth solutions. Auer Signal's audible signalling equipment is among the loudest on the market.

We only use premium materials for our signalling equipment. Polycarbonate plays an important role in this: it is impact-resistant, UV-resistant and colour-fast. We pay particular attention to intelligent lens design and the latest LED technology in our visual signalling equipment. We offer products with the strongest high-power LEDs available to meet the highest demands in signalling.

Products for every application
Our wide product portfolio covers all the demands of our signalling equipment markets. As well as our high-end equipment, our range also includes some exciting products that boast excellent value for money. In line with specifications, we provide our customers with a complete product portfolio. From automation technology and mechanical and systems engineering, building technology, chemical and petrochemical industries and safety applications right up to working under extreme conditions, we serve all industries and sectors.

We keep our promises, and have done since 1910
Auer Signal is an owner-managed family business in its fourth generation. We are a dependable company and have been a reliable partner for more than one hundred years. Our long-standing reputation as a trustworthy company is highly valued by all our customers and partners.

As an owner-managed family business, we stay true to our word. We have a dedicated team of passionate experts, who take care of our customers' wishes and requirements in a friendly, personal and efficient manner. This is reflected in the international business relationships we have built up on trust and reliability, which are still standing after decades.

Auer Signal

sprecher+schuh

Selecting Signaling Devices

TECH-Signaling_v1 07/2017

Sprecher + Schuh US Division Headquarters
15910 International Plaza Drive
Houston, TX 77032

Customer Service: (877) 721-5913
Fax: (800) 739-7370

Sprecher + Schuh Canada
10 Spy Court
Markham, ON L3R 5H6

Customer Service: (905) 475-6543
Fax: (905) 475-0027

www.sprecherschuh.com

Since 1910, Auer Signal's driving force has been their desire to use exceptional engineering ingenuity to develop superior technical equipment that is a step ahead of the rest. This desire is now stronger than ever. Although Auer Signal is a medium-sized company, they have huge ambitions. As an owner-run family company, trust and compassion are at the heart of all they do. Auer Signal is passionate about upholding the image they have created.

Sprecher + Schuh is the exclusive distributing partner of Auer Signal product in the USA and Canada. We have provided reliable control and protection solutions for our customers since 1903.