

ÁKOS KUN

# INSTALLATION AND USE OF IP- AND ANALOG TELEPHONES

Motto:

**The phone is no substitute for personal contact.**

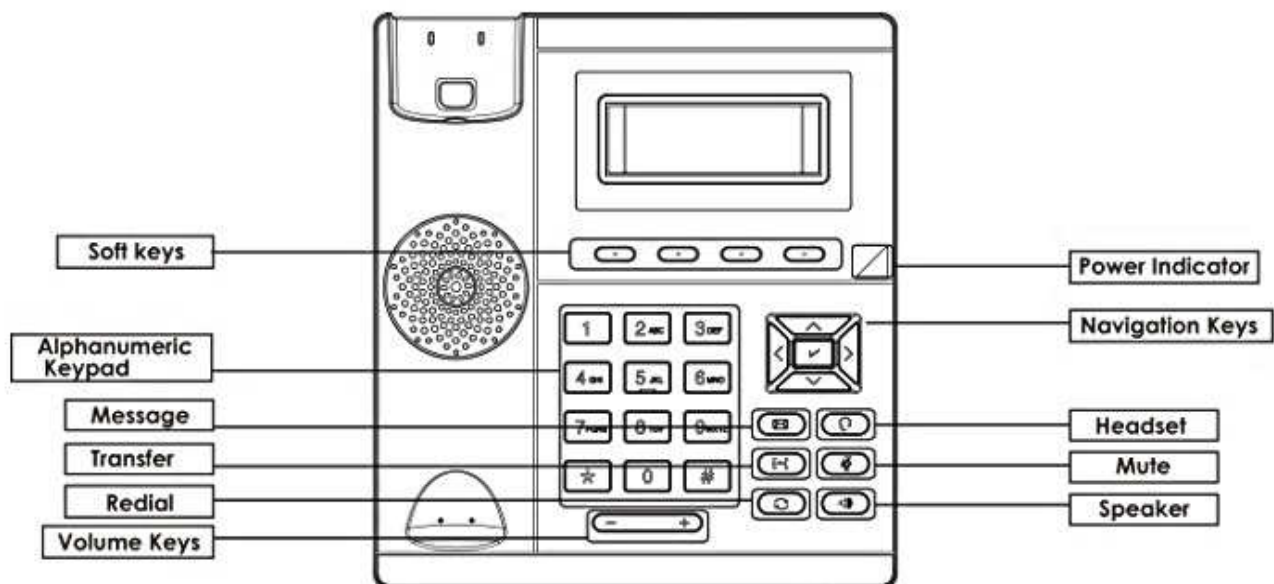


Update: May 12, 2023

## Installation and use of Axtel AX-200-500W IP telephones

In addition to the rapid spread of mobile phones, landline phones have not gone out of fashion. It is used not only by companies, but also by individuals. Their advantage is that you can make calls with them cheaper and you don't have to charge them every day.<sup>1</sup> The prices are also at least an order of magnitude lower than those of smartphones. And their lifespan is an order of magnitude longer. A special version of landline telephones is the IP (VoIP) telephone. The Internet Protocol telephone is a device that uses the Internet for voice transmission. As we know, using the Internet is free, so calling via the World Wide Web is also free. In the case of a foreign call, calling via conventional telephone lines or through the transmission towers of the mobile phone network is quite expensive. Individual countries transfer telephone numbers outside their reception area to the neighboring country. In the case of an Australian phone call, such a call can go through dozens of countries, and each company charges quite a bit for forwarding.

However, the Internet is free all over the world, so if the called party also has an IP phone, they can call each other continuously from morning to night, for free. If you have a mobile phone, the IP call center uses the Internet until it reaches the called party, and hands it over to the local mobile phone provider. Therefore, even when calling Australia using this method, we will only be charged for a local call.<sup>2</sup> Despite all this, the IP phone is not expensive. It doesn't cost much more than a traditional landline phone. Putting it into operation is also not complicated. In the case of a VoIP phone number, you just need to plug it into the router's Ethernet connector, register it on the service provider's server, and you're ready to use it. No need to call a mechanic.



<sup>1</sup> For domestic calls, the average per-minute charge for a mobile phone is HUF 35. The average per-minute charge for analog telephones operating on a copper line is only HUF 5.

<sup>2</sup> If the owner of the mobile phone downloads a VoIP application to his device, we do not have to pay the local tariff either. With these applications, he can make free calls, even abroad. This application can only be uploaded to mobile phones with an operating system. Not for analog line phones, but the per-minute rate for these devices is much lower. By the way, we can now chat with cameras with smartphones. The two best-known video phone services are Skype and Viber. (Many people are angry with Skype because they supposedly spy on us. They eavesdrop on our conversations.) Skype and Viber are only free for us. If they call someone, they also have to pay a local minute rate and a connection fee. This is the same as VoIP phones.

However, using it successfully can be difficult. This is because manufacturers do not always include detailed instructions for use. Because of this, non-technical people cannot learn how to use certain functions. It also often happens that the distributors do not prepare a Hungarian translation of the mostly English user manuals. They start from the fact that young people already speak English, and older people use Google, Bing or Deepl translation programs supported by artificial intelligence. Unfortunately, this device is not free from these problems either. Therefore, the following guide in Hungarian tries to help users of Axtel phones to make the installation and use of their device smooth. This guide also works well for the more advanced types because they work the same, just with a few extra features. By the way, even this cheapest type has everything you can expect from a modern landline phone. (Individuals do not need the Conference function or Call Forwarding.)

First, unpack and assemble the device. Insert the support into the two recesses on the back of the device. Push it up until it clicks into place. Then connect the supplied cables. We plug the LAN cable into the sleeve labeled Internet, and push the other end of the cable into a free connector on our router. Connect the cord of the telephone handset to the socket marked with the telephone handset icon. (The other phone connector is used if you want to make a call with a headset.)<sup>3</sup> To avoid breakage, we stuff the cords of the phone handset and the headset into the grooves below them. Connect the other end of the phone cable to one of the sockets marked **Tel** on the router. Finally, plug the cord of the power supply into the socket labeled **DC5V**.

We push the power supply unit into the socket. Booting starts. **Booting...** appears on the display. After that you will see **Initializing...** The device will then load the operating software. After that, the message **Check firmware, please wait...** will appear. The device then contacts a DHCP server on the network to obtain valid network settings (e.g. IP address, subnet mask, default gateway, DNS server). This also takes a few minutes. Meanwhile, the orange light comes on. The LCD display is ready for use. The LAN connector icon that appears in the upper left corner indicates that all your accessories are properly connected to the network. The calendar and the clock become visible on it. However, it shows the date of manufacture. Update according to our time zone. Four instructions can be seen at the bottom of the display, in a dark blue field. They can be activated with the four buttons below them.

Press the **Menu** soft key and scroll down to the **6.Settings...** item with the **Down** arrow of the **Navigator**. Press the **Enter** function key or the central **Enter** key of the Navigator (marked with a small tick). Two setting modes will appear. The first is **Basic Setting**. This is what we need now. Since this is selected, press the **Enter** function key again. Two items appear on the display again. Use the **Down** arrow of the **Navigator** to go down to the **2.Time & Date...** item and press the **Enter** function key again. In the future, we can choose from two options, **Manual** and **SNTP**. If the Manual item is selected, the exact time, calendar, and time zone must be set manually. This is a rather tedious operation and there is a possibility of error. If the quartz generator controlling the clock is not accurate enough, it may happen that after a few weeks our clock will be late or fast.

Instead, activate item **1.SNTP Settings**. In this case, Microsoft's atomic clock performs the setting. We only need to set the time zone corresponding to our location. In the **1.TimeZone** field, use the **Right** and **Left** arrows of the **Navigator** to set the time zone **+1HungaryB**, then press the **Save** function button. After that, unplug the power supply from the outlet and plug it back in. Now, during **Initializing...** the device also retrieves the exact time from the service provider's server. There can be no delay or rush here because, like the Windows clock, Microsoft updates our clock every week. The first item of the Basic sector can be used to set the language of the Menu. However, it is not worth touching the **1.Language** item because Hungarian is not among the languages offered. In addition to the world languages, only the Czech, Slovak, Slovenian and Serbian languages were included, but not us. That is why we use the default English language.

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<sup>3</sup> This mode is usually used by telephone operators. In this case, both hands are free. There is no need to hold the phone between their shoulder and ear when turning pages. Another advantage of the headset is that it has better sound quality.

If you have subscribed to an IP phone, you do not need to configure your device, because your phone automatically downloads the settings by connecting to the DHCP server. However, it does not do this in all cases. The service providers do not provide a device for their line, we have to buy

**KX-TS880FXW**



**Gigaset DL380**

it. They only provide us with a phone number. When the mechanic comes out to install the router and the media box, he doesn't deal with the phone because he doesn't understand it. There are thousands of IP phone types in the world and it is impossible to get and learn the manuals for all of them. It is also not worth doing this, because in most cases, users buy an analog line phone. If we buy such a device, we will have no problem installing it either. It only has one connector. Plug the attached telephone cable into this, and connect the other end to one of the sockets marked **Tel** on the router. If it doesn't work after assembly, plug the phone cord into the router's other free connector. Connecting the handset is also no problem.<sup>4</sup> This device does not require a power supply. It can be used immediately. In most cases, it can also be attached to the wall.

Analogue landline phones are very cheap. The price of most of them does not even reach HUF 10,000. It is worth choosing the products of the French company Alcatel. The price of the **Alcatel T58** type device does not reach HUF 10,000. Beautiful, well-designed device with LCD display, date and time display, speakerphone, volume control, microphone mute, speed dialing, caller ID and redial function. If you want even more, choose the **Alcatel T76** or **Alcatel T78**. Their display is no longer two-line, but three-line, and they have 8 speed dial buttons. The Flash (R) button is also missing from them. Their prices are HUF 12,500 and HUF 14,600 respectively. Their ultra professional version is the **Alcatel 880**. The price in the NewShop web store is HUF 21,110. The **Gigaset DL380** landline phone sold by the Bluechip specialist store is recommended for the elderly. Price HUF 16,490.

The most popular type is the **Alcatel T76**. Its services are close to those of VoIP telephones, but its quality falls short. This is due to the limited energy source. It has no power supply and no batteries. You have to use the 50 mA supplied by the ISDN line. (The Auerswald Comfortel D-100-VoIP phone is powered by a 1500 mA external power supply.) Due to its small power source, do not expect deafening volume. Sound quality is not HiFi standard. HD quality sound can only be expected from IP phones costing tens of thousands of forints. However, it does not lack an internal microphone built into the device housing. In this way, you can use it hands-free, and several people

<sup>4</sup> Regardless, it does not work without electricity. The analog ISDN lines were supplied with electricity by the service provider, so they worked even in the event of a power outage. However, with the rapid spread of the Internet, analog telephones are connected to the router, which cannot function without electricity.

sitting next to you can talk on it. (It may get a little noisy, because the microphone on the bottom of the device hears the sound of the speaker. In more expensive VoIP phones, the duplex hands-free system is already trouble-free, because an echo suppression circuit is built into it.) If you are satisfied with the volume and sound quality of a pocket radio, you can also use the hands-free function. (However, when using a telephone handset, the volume is sufficient and there is no buzzing. The sound quality is also acceptable (back and forth). We also do not need to mute the microphone.

The limited power current also affects the display. The seven-segment and dot matrix numbers and letters are rather thin and difficult to see. The brightness of the LCD can be changed with the **Contrast** button, but the maximum level of 5 will not blind us either. It is also quite disturbing that the deactivated segments and dots are strongly visible under the activated numbers and letters. (The extent of this depends on the angle of sunlight.) The strength of the ringing can be adjusted with the mechanical switch on the back panel. Since the sound of this is not deafening either, let's leave it at the highest volume.

The operation of the device is supported by a detailed user manual in Hungarian. However, the Hungarian text, sandwiched between a dozen languages, is so small that it can hardly be read even with a magnifying glass. Therefore, both the Hungarian and English texts have been enlarged and can be found and printed in the image attachment. After assembly, this device will not work immediately either. Router recovery time min. 5 minutes. We start setting up the device by updating the calendar and clock. Since this phone is not connected to the World Wide Web, we cannot synchronize to Microsoft's atomic clock. Here we only have the manual setting available.

When setting the date, hour, minute and time zone, make sure that the time range is 12 hours. Therefore, pay attention to the activation of the **AM** and **PM** (morning-afternoon) icons according to the time of day. By pressing the **MENU** button, you can go from one item to be set to another. The next item flashes to indicate that it is waiting for setting. We also have to do the autumn-spring time change. Do not worry about setting the language of the menu, because Hungarian is not among them. Let's leave the **ENGLISH** language. The settings can be confirmed by pressing the **MENU** button again. (Then we hear a faint beeping sound.)

Unfortunately, this device cannot remember the set time. This is because there is no battery in this phone to power the quartz generator. If you go away and turn off the router for fire protection reasons, it will reset to default when you turn it back on. Then you don't need to set the date and time again, because it will happen. There is no battery in the VoIP phone either, but this is not a problem here, because the service provider's server immediately sends the exact time when you switch back on. However, analog phones are not connected to a server, so there is nothing to update them. Mobile phones, on the other hand, work through a server, so when they call us, they send the date and the exact time along with the voice. If we can't wait for that, tell a family member with a cell phone to call us. (It doesn't cost him anything, because we don't have to pick up the phone. It's enough if they ring us.) We don't have to worry about the phone numbers on the speed dial. These will not be deleted in the event of a power failure.

When programming the speed dial buttons, the 12 name fields can only be filled in with capital letters. With the 26 letters of the English alphabet. It is not possible to use lowercase letters. By pressing the **1** key, you can also preconjure some punctuation marks. The phone number must be written in the 14-character field above it. First, press the **M1** button. Then press the **Program** button below the display. (Button marked with the number 8 in the user guide.) The first character of the middle field for entering the phone number will start flashing. Enter the phone number of the person you want to call, together with the calling number. (The numbers are written next to each other in series.) Press the **Program** button again. A short beep confirms the entry. After that, the cursor starts flashing in the bottom line of the display. Enter the name of the person you want to call. Confirm this entry by pressing the **Program** button.

Repeat this procedure with the other speed dial buttons. If we messed up the entry somewhere, we can delete the wrong character by tilting the **Navigator** to the left with the **Trash** icon. When entering a foreign phone number, it can cause a headache that you cannot enter a **+** sign with this phone. (Hungary calling number: +36) The developers solved this technical problem by entering the

numbers **00** instead of the + sign. If you want to call someone, first pick up the handset, and then press the speed dial button. After that, the phone number of the caller appears in the middle line of our display, and his name appears in the bottom line. But only if this data is found in the phonebook of your device. Our phone number also appears on the called party's display. We cannot prevent this here.

We can only prohibit the release of our phone number in more expensive VoIP phones. Owners of analog telephones can only request encryption from the service provider. However, there is a fee for this, which will appear in our monthly phone bill. If you no longer want to call someone, press the M1-8 button, then long press the **Trash** icon on the left side of the **Navigator**. Your name and phone number will then be deleted. If you want to cancel your outgoing calls, press the icon in the form of a handset on the right side of the **Navigator**. After that, press the **Trash** icon on the far left. Each press deletes an outgoing call. If you want to delete everything, press and hold the **Trash** icon.

If the 8 speed dial icons prove to be not enough, we can create 10 more in the Phonebook, which can be accessed with two clicks. Entering the data is essentially the same as filling the M1-8 buttons. Press the **Program** button under the display. **STORE MEMORY** appears. Press the **0** key. (Now the narrow programming signal below it will be activated.) Set the first storage location. (Once we have 10 storage locations from 0 to 9, **0** will be the first.) Press the **0** key again. The inscription **E0=** appears in the lower line of the display. Press the **Program** button. The first character of the phone number starts flashing in the middle bar. Enter the phone number. (Here, too, with the developer number, and closely next to each other.) When we are done with it, press the **Program** button again. Now the first character of the bottom line will flash. Enter the name of the person associated with the phone number. This entry is also acknowledged by pressing the **Program** button.

We can continue this loading up to the 9th storage. This device can speed dial a total of 18 phone numbers. (If you need more than that, use a VoIP phone. The size of the Auerswald Comfortel D-100 device's phonebook is 2000 names + phone numbers. You can no longer cram so many phone numbers onto the device, so the manufacturer offers a COMfortel panel for these devices. It only has speed dial buttons. The panel must be placed next to the phone. It is also possible to stack several panels next to each other.) Using the two-click phonebook is very easy. Press the **Phonebook** button below the display. **DIAL Memory** appears. Press the serial number of the phone number you want to call. (If, for example, we want to call our friend stored in the third place, press the number key **3**.) Pick up the handset. The call will start immediately. If you don't remember how many storage spaces the person you want to call is in, "piano" through the storage spaces from 0 to 9. The same can be done with the M1-8 speed dial buttons. The device will not call the phone numbers of the persons appearing on the display until you pick up the handset.

The **Flash** button has a function that also divides professionals. It can work in four ways. For analog devices, the Flash time can be set to 100/300/600/1000 ms using the Flash or R button. If the interruption time is longer than what the PBX expects, it will interrupt the call, and if it is shorter, the PBX will not detect it. For analog devices connected to a router, the delay time is no longer important. Let's try all four values and leave it where we find the sound to be the clearest. If you get lost in the many settings, press the **R** button. The device then resets and you can start programming from the beginning.

With VoIP phones, we no longer have to worry about the time between entering phone numbers, despite this, these devices also contain a Flash or R button. Here they can perform different tasks. One: If the user is on a call and wants to communicate something important to the other end of the line, they can briefly disconnect the line by pressing the Flash button. The line is then immediately reconnected and the user can continue the conversation. The other: If the user is already talking to someone and receives a second call, they can use the flash function to switch to the second call without having to disconnect the first one. The third: If the user wants to transfer the call to another line, he can use the Flash button to transfer the call without leaving the line. The exact purpose of our Flash button can be found in the user manual of the device. If you don't write about it, press it and see what it does. On analog telephones, the R button can be used as a program button or to exit setting programs.

The **Sound or Impulse settings** are also starting to become redundant. This feature is a holdover from the dial telephone era. Unlike push-button telephones, old dial telephones transmit the telephone number to the exchange in the form of pulses rather than sound. If you are in a developing country where such an outdated switchboard is still used, you must switch the device to **Impulse** mode. Press the **Menu** button and scroll to **SET TONE/PULSE** with the up or down arrows of the **Navigator**. Press the **MENU** button again and use the up or down **arrow** of the **Navigator** to set the inscription **PULSE**. Press the **MENU** button again to hear a faint beeping sound. The device has switched to dial telephone mode. This function is also not worth dealing with, because the device is factory set to **Sound** mode. It's not worth touching the **Handsfree volume** button either. Press the **Speakerphone** button, then press the **Speakerphone volume** button. At this point, the bar graph of the display jumps back to half volume. Since even the full volume is not strong enough, let's leave the factory setting for now.

The above is typical for almost all analog phones. The only exceptions are those with batteries, but in these the pencil batteries must be replaced every three months. 3 alkaline pencil batteries are not cheap. A bigger problem is that the batteries always run out when we need the phone the most. In summary, the Alcatel T76 device is not perfect, but we cannot expect more for this money. Other similarly priced analog phones can't even do that. If you want a service similar to digital phones, choose **Panasonic KX-TS880FXW** analog phone. Price: HUF 27,600 (Caution, batteries are required! It works with 3 alkaline pencil batteries.)

Beware of cordless DECT phones as well. These are connected to the telephone network using microwaves. It is undoubtedly convenient to pick up a device similar to push-button cell phones and use it to make calls while walking around the house, but the microwaves penetrate the brain, causing brain tumors with frequent use. Since these devices are in constant contact with the base station, they broadcast even when we are not on the phone. They create significant electrosmog throughout the apartment. Don't give in to the temptation because they have better sound quality and, unlike mobile phones, you don't have to worry about their power supply, because they constantly charge themselves when placed on the cradle. We will pay for comfort with our health. Manufacturers often claim that the electromagnetic radiation of their device is below the limit that is harmful to health. However, they keep silent about the fact that these radiations add up. If there are several similar sources of radiation in the apartment (e.g. microwave oven, WLAN, Wi-Fi, Bluetooth), their radiation is summed up, which already far exceeds the value dangerous to health.

It is also worth buying a mobile phone from Alcatel. Unlike the HUF 650,000 iPhone smartphone, the price of Alcatel push-button phones does not even reach HUF 20,000. Don't be ashamed of the push-button telephone, because almost all the politicians of the great powers use it. There is no operating system in these G2 devices, so hackers cannot send viruses or image programs into them. Since they don't have GPS, they can't track their user's movements and location, which protects them from terrorist attacks. (However, we have an FM radio, so they can listen to the news. They also have a camera, but its resolution is very poor.)

Back to Internet phones, we have other issues to contend with here. If we want to make phone calls via the Internet, we need an IP or VoIP (Voice over Internet Protocol) phone. However, you can't just go online. This requires an IP address. Every device, device and equipment connected to the Internet has an IP address. Even for small smartwatches. Based on this, they can be identified. The IP address is given by the service provider. We also receive it immediately, via the router. However, this alone is not enough for making calls. We also need to register with the service provider. If we don't register our device (e.g. computer, phone, smart refrigerator, etc.) they won't let us onto their server. In this case, there may already be problems. Since neither the manufacturer nor the dealers test the functionality of their device with all the telephone companies in the world, it is possible that we choose a type that cannot be installed at the telephone company with whom we have a contract. (This is usually not the device's fault.)

In such cases, we first contact the service provider that the call does not go through and the device does not receive calls. You should register the device.<sup>5</sup> The administrator tells you that no installation is necessary, the device will take care of it by itself. (Indeed, not always. As with everything in life, the choice of device and internet service provider is also a matter of luck.) Then we contact the online store, where they tell us to return the device, and then they repair it in the service center. But why send it back, no problem. For this, they provide the e-mail address of the service, where they will respond to us willingly. They take out the device's factory manual and copy from it how to register the device. (The manufacturer is aware of this problem and offers a solution in the manual.)

The service recommends that you restore the factory settings as a first step. Based on the instructions, we will try to perform the sequence of operations. If we are lucky, the device will accept the **admin** password of the factory setting. (The sequence of operations can be found on page 14 of the manual, under the heading **Registration**.) After that, you are ready to register. If not, we have to enter the data that the device cannot download from the service provider's server via the web interface. (This information can be found on the next page of the manual. The service will copy it and send it to us by e-mail.) If we are unlucky, the device will not accept the factory password either. In such cases, we cannot proceed, we cannot enter the missing data, because the device's software does not offer the required fields. In this case, everyone puts their hands up, and we get into a stalemate. Neither the dealer, nor the service, nor the service provider know what to do. They recommend that we contact the manufacturer with our complaint. To our surprise, the factory administrator replies to our letter the very next day. Since he doesn't know the solution either, he turns to a specialist in their development department. The software developer of the mostly foreign company says that he cannot connect to the domestic service provider from abroad, so he cannot determine the cause of the error.

At that point we are on the verge of a nervous breakdown. For lack of a better option, we start searching the Internet to see if we can find someone who can help. During our browsing, we come to VoIP phone providers. We complain about our problem to some. The answers clearly show what the problem is. We received an analog phone number that cannot be used to install an IP phone. You need a VoIP phone number to install the IP phone. When issuing an Internet-based phone number, the service provider creates an account on its server that we can register for. In this, you must enter the received phone number, the password and the SIP user ID (Authenticate ID) for the name of the SIP account user. Until this happens, we cannot register the device as stated on page 14 of the manual. We can't even go to the web interface to make the detailed settings, because that requires the phone's IP address. Although the service provider sends us an IP address through its server, it turns out that this is an error IP address. If the service provider provides us with a VoIP phone number, in addition to the phone number, the contract must include a username and password pair as well as a server address. Using these data, it is possible to register the phone number.

Since these data are not included in the contract, it is almost certain that we received an analog telephone line, which cannot be used to operate an IP telephone. In order to clarify the situation, please contact Vodafone's customer service. In the case of a personal appearance, they cannot shake us off as easily as on the phone. At this meeting, the truth will finally be revealed. The specialist informs us that it is not possible to install a VoIP phone at Vodafone. They are stuck with ISDN lines, on which only analog telephones can be installed.<sup>6</sup> This could have been said at the time of

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<sup>5</sup> The only way to quickly deal with matters is by phone. Like other multinational companies, telephone companies do not have e-mail addresses. They maintain a telephone customer service. (Vodafone's phone number: **1270**, Telekom's: **1414**, Yettel's **1220**, and DIGI's **1272**.) Let's prepare for the fact that they will entertain us with music for long minutes. Meanwhile, they inform us in Hungarian and English that the various which button should we press in case of complaints. But then nothing happens. Bilingual text grinding continues. until they finally talk to us after the third or fourth attempt. Since they maintain a 24-hour service, it's worth calling them after 10:00 p.m., because the traffic is already slowing down at that time.)

<sup>6</sup> This is incomprehensible. After Vodafone acquired UPC, it also inherited its coaxial cables. VoIP telephones could be operated without hindrance on these cables, which enable fast Internet access.



signing the contract. The customer service of major telephone companies is mostly located in shopping malls. If we're lucky, the other major service providers can be found here as well. Looking for a way out, we go to the other big phone company, Yettel. There it turns out that they only operate mobile phones, they don't have a fixed line phone service. Neither analogue nor VoIP. Finally, we inquire at Telekom. There, we are happy to hear that the news of the existence of Internet phones has already reached them, and that they can provide a VoIP line. However, our joy does not last long when we find out that the monthly rental fee is HUF 4,200 (Vodafone only charges HUF 500 per month for the analog phone line.)

In order to avoid this ordeal, we inform the telephone company before concluding the contract that we require a VoIP telephone number, prepared for installation. If they are not willing to do so, let's find another service provider. Those who signed a contract with the **DIGI** service provider are in an easy situation. DIGI Távközlési és Szolgáltató Kft. was founded by a Transylvanian entrepreneur, Zoltán Teszári. In just a few years, the company has become a leading TV, Internet, and telephone provider not only in Romania, but also in Hungary. On the one hand, their success is due to the fact that they are still the only ones who use a fiber optic cable that provides extremely high speed for signal transmission. The other is that they offer their services at incredibly low prices. Their TV and internet subscriptions are also the cheapest.

And they blew up the market with the tariffs of telephone networks. Within the Digatel 250 network, the per-minute fee for landline calls is zero. It is also free if you make a call to the Digimobil network. You only pay for calls outside the network. The fee for local and domestic landline calls is HUF 4/minute, 24 hours a day. The fee for calls to the domestic mobile network is HUF 6/minute, also 24 hours a day. The monthly subscription fee for the phone is ridiculously cheap, HUF 250/month. This low tariff is causing a real revolution in the Hungarian telecommunications market. This is why mobile service providers have reduced their fees from HUF 60-65 per minute to HUF 35-40. Cable TV networks were also forced to move. To the delight of the poor, the number of channels in their basic package has been significantly increased.

Since the company's **DigiKábel** service is based on Internet Protocol-based voice transmission technology, there are no obstacles to the use of VoIP phones. There is no need to install a separate application on an IP phone. You only need to enter the username and password on the server. The only disadvantage of the DIGI service is that it is not available everywhere. It costs a lot to pull out fiber optic cables, so it is only worth bringing them into residential areas and multi-storey buildings. This service must be dispensed with in neighborhoods with single-family houses. However, the company's satellite service has overcome this obstacle. The DIGI satellite dish can be seen on almost every house in the countryside. Its residents use it to access the Internet, make phone calls and watch TV. Although it is slower than the optical network, it is no worse than the services provided by other providers using coaxial cable or copper wire.

If we have already concluded the contract, we can do two things. One is to get by with the analog phone<sup>7</sup> and sell our IP phone at a discount on an online second-hand market.<sup>8</sup> If you're still stuck with your VoIP device, let's cancel your phone service with Vodafone and find a new provider.<sup>9</sup> There is plenty to offer on the Internet. First, let's take a look at the Startlap collection. Here we can

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<sup>7</sup> If you only make domestic calls, there is no point in operating a VoIP phone, because you have to pay the same per-minute fee for both landline phones. The internet phone is worth it for those who make a lot of calls abroad, because even in this case you only have to pay the per-minute fee of the local service provider. Until then, the sound goes for free via the Internet. However, stick to the landline phone, because the local call fee with a mobile phone is HUF 35-40 per minute. With landline phones, however, it is only HUF 4-6.

<sup>8</sup> We have five of these: Jófogás, Vatera, Facebook Marketplace and Teszvesz. Among them, Jófogás is the most popular because it is free and easy to register with them. (Facebook Marketplace is also free, but it is difficult to navigate there and is full of ads. Vatera and Teszvesz even ask for our bank account number during registration.) Jófogás does not conduct business. Give the seller's e-mail address to the buyer, then arrange the payment and delivery between them. All he asks is for the seller to let you know if the item has been sold so they can delete it from their records.

<sup>9</sup> We should not cancel the Internet and TV service, because it is cheap and of good quality. Their landline phone service is also cheap, but we don't need an analog phone.

choose from more than a dozen Hungarian VoIP service providers. Web address:

[https://voipszolgaltato.lap.hu/magyarorszagi\\_voip\\_szolgaltatok/16877694](https://voipszolgaltato.lap.hu/magyarorszagi_voip_szolgaltatok/16877694) We will not have an easy time with the new service provider either, because we have to do the registration. The service provider does not know what type of phone we are buying. There are service providers or contractors who do all this for us, but the problem with them is that they recommend one type of device. The installation of this has been practiced, and the operation is carried out routinely.

Various limited companies offer services for companies. They mostly offer cloud-based complete services. In this case, the customer does not have to do anything. The company delivers and operates the system on a turnkey basis. One of them is **Opennetworks Kft.** Their website can be found at the following address: <https://www.opennet.hu/> Click on the **Telefonáló belépés** icon in the upper left corner of the opening page. On the next page, you will receive detailed information about their offer. Their service is not cheap, but for a large company, a few thousand forints a month is small change. A FAX service can also be ordered in addition to the telephone.

For this money, the company also provides special services. One of them is Online Voicemail. You can easily access the caller's voicemail from any computer, and save your messages on your computer. Their other unusual service is Voice recording, voice storage, ftp transfer. This is not easy to do, because the new European Data Protection Regulation (GDPR) prohibits recording anyone's voice without their consent. However, Opennetworks has developed a solution that makes this possible. They install the Cisco SPA303-G2 device. This type always works in all conditions. While most devices break down after a few years, this is inevitable. It can handle 3 phone lines. It has a high-quality microphone and speaker. Still, it's not expensive. The price is HUF 25,000. If the company trusts terrestrial signal transmission more than the cloud, choose the Telekom service provider. In addition, the monthly rental fee of HUF 4,200 they ask for is much lower than that of service providers operating in the cloud.

Communication without eavesdropping is important for those dealing with strategically outstanding development. **Rebell Telecommunication Zrt.** offers an encrypted line to protect industrial secrets. Their applications can be installed on both IP phones and mobile phones operating on iOS and Android platforms. With a stable internet connection, their service is available anywhere in the world. A secure conference call can also be organized with unlimited participants. Its use does not affect the usual user habits. The monthly fee for the service is HUF 3,900 + VAT. It does not include hidden costs. Access is granted to 3 users. Monthly fee for adding additional users: HUF 990 per line. Their website address: <https://www.rebelltel.hu/> E-mail: [info@rebelltel.hu](mailto:info@rebelltel.hu) Tel: +36 1 999 0100.



SPA303-G2



6730i

The service of **VNM Zrt.** is recommended for small companies and individuals. There are no subscription or switching fees with them, and we can keep our previous landline phone number. For all this, we only have to pay HUF 1,000 per month. Web address: <http://www.voipnetwork.hu/> The

conversation fees are also very low. They are between 4 and 6 HUF per minute. If you call a mobile number, the per-minute rate increases to HUF 30 and HUF 40. No switching fee is charged. Abroad, local call fees are slightly higher, but still much lower than if we were to call our relatives and business partners via analog telephones across several countries. At VNM Zrt, we can choose from dozens of phones, from entry-level to top devices. They mostly also recommend Cisco SPA serial number phones. Their **Aastra 6730i** device is noteworthy, which, despite its HUF 21,510 price, is also capable of holding conferences. Its sound quality is excellent and it has two-way speakerphone. (This means that after the speaker is switched on, the second microphone installed in the device housing is switched on. Thus, there is no need to pick up the phone during hands-free operation. This hands-free mode is also called duplex speakerphone operation.) Its detailed parameters can be found here: <https://www.voip-info.org/aastra-6730i/>

Their novelty is the VoIP 3G telephone service. This is a third-generation telephone subscription, for which a fixed telephone number and two switchable extensions are provided, for only HUF 1,000 per month. We also have the option of Call Forwarding. We can also order a virtual FAX package for HUF 600 per month. (This service also requires an Internet subscription. Instead of expensive ink cartridges, all FAXes are sent to a central e-mail account, where only the most necessary ones are printed.) Before signing a contract with them, ask if they can install the VoIP you purchased earlier our phone. (This probably won't be a problem.) To do this, we need to send in our phone.

To avoid this, we first try to register our device. We request the SIP user ID and the Authenticate ID from our new service provider, and register as described on page 14 of the manual. Changing the default **admin** password later is also not difficult. Press **Menu** → **Settings** → **Advanced Setting** → **Password (default admin)** → **Phone Settings** → **Set Password**. Then enter the current password and the new password in the **Current PWD:** and **New PWD:** fields. It is also necessary to confirm (re-enter) the new password. Finally, press the **Save** function button to save the new password.

If somehow the installation succeeds, we can finally use our device. It is not difficult to use, and the number of functions does not even come close to that of expensive smartphones. (By the way, according to statistical surveys, no one uses 90% of the functions of smartphones costing hundreds of thousands of forints.) Looking at the device, we immediately see that we have a push-button line phone with a traditional telephone receiver. On the right side of its user interface, you can see an orange light that indicates that our device is working. The **Power indicator** flashes when we are called. At the same time, the speaker makes a rattling sound. The tone of this can be adjusted.

With this device, you can set 9 types of ring tones. Press the **Menu** function key and use the **Down** arrow key on the Navigator to go to the **Settings** item. Press the **Enter** function key. Moving on, the **1.Basic Setting** item is selected. Use the **Down** arrow key to scroll down to item **5.Ring Tone**. Press the **Enter** function key. After that, the various rattling sounds are heard one after the other. The selected sound can be saved by pressing the **Save** function button. If we don't want our child to be woken up by the phone ringing, or if we don't want to disturb our neighbors, leave the **1.Default** ring item with a consolidated sound.

The headset (headphones with a microphone) function has already been discussed. Mainly used by telephone operators. With modern landline phones, you can transfer the call to another phone. The **Headset** button is located below the Navigator. Below that is the **Mute** button, which mutes the microphone. Pressing it again will activate it again. The Mute button not only mutes the microphone of the handset, but also the headset and hands-free mode. This is a very useful feature.<sup>10</sup>

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<sup>10</sup> If e.g. we are talking to our mother-in-law and our wife is standing next to us, it can easily happen that the conversation turns to a sensitive topic. In such cases, we press the **Mute** button, and while our mother-in-law continues to persuade us, we can discuss with our wife whether we should give in to her request. Then press the Mute button again and give the answer. Muting the microphone can play an even more important role in business negotiations. Therefore, do not buy a device that cannot do this. The Handsfree function is equally important. The activation of individual functions (Mute, Speaker Headset, Transfer, DND, SRTP) is indicated by a blue icon on the left and right side of the display.

Pressing the **Speaker** button turns on the speaker under the handset, and people in our company can also hear our phone conversation. You don't even have to pick up the handset to speak, because the device has a separate microphone that turns on in this mode. The sensitivity of this is so great that you can hear our voice clearly even from 1 meter away. However, let's not forget that you can also hear the voices of those in our company.

The call is initiated in the usual way here as well. You don't need to open a window for this either, you don't need to press the Menu function key. Pick up the handset and enter the phone number on the alphanumeric keypad, then press **#**. The same must be done when using hands-free and headphones, only before pressing the **Speaker** or **Headset** button. The strength of the speakerphone can be adjusted by pressing the **+** and **-** ends of the **Volume keys**. Its scale can be seen in 14 degrees on the bar chart of the display.

You can also dial the desired number using Contacts or the Call log and make the call in one of the following ways. However, for this, you must first enter frequently called phone numbers into the device's memory. Press the **Menu** function key and scroll down to item **3.Dir** with the **Down** arrow of the Navigator. Press the **Enter** function key again, select the **2.Contacts** item, and press the **Menu** function key again. Then press the **Add** function key. The **Name** and **Number** input fields appear. Enter the name of our friend in item **1.** and his phone number in item **2.** (On a push-button phone, this is not easy, because in order to advance some letters, we have to press some number keys three or four times.)

First, change the enter function key to **abc** and enter its name. The alphanumeric keyboard of the device shows small letters next to the numbers. These must be pressed as many times as we need a letter. If e.g. we want to enter the letter **s**, the **7** key must be pressed four times. To make things even more difficult, to enter uppercase letters, we have to switch the input function key to **ABC**. As we typed, switch back to lowercase and continue entering the name. If you are satisfied with this, change the function key for entering to **123**. Use the **Down** arrow to go down to item **2** and enter your phone number. (Do not put parentheses between individual numbers, do not use letter spacing. Write the entire phone number next to each other.) The problem with foreign phone numbers is that we cannot put a **+** sign in front of the dialing number for push-button phones. Not found between punctuation marks. The developers solved this technical problem by entering the numbers **00** instead of the **+** sign. (In this situation, Hungary's calling number looks like this, for example: **0036**)

If you make a mistake, you can use the **Delete** function key to delete the wrong letter or number one by one. If it is an intermediate letter or number, use the **Left** and **Right** arrows of the Navigator to move behind it. If you want to delete everything, press the **Cancel** function key. Finally, after filling in the two input fields, press the **Save** function button. If you want to call someone from your register, select the **1.All Contacts** item, then scroll down to the name of the person you want to call with the **Down** arrow of the Navigator, then press the **Dial** function key. The call can be canceled with the **Cancel** function key. (The call can only be interrupted by the calling party.) If someone has more than one phone number (work, home), press the **Detail** function key. Your phone number will then appear under your name. Seeing this will make the choice easier.

If you want to delete someone from your phonebook, press the **Menu** function button in the **1.All Contacts** field, select the person's name with the **Down** arrow, and then press the **More** function button. Then press the **Delete** function key. The device then asks **Are you sure to delete this item?** Press the **OK** function key. The person's name and phone number will then disappear from the register. If you want to know who you have called before, press the **History** button. The device then displays how many calls we have had so far and to which phone numbers. The call list can be deleted individually by pressing the **Delete** function key. If you want to call the last person you called again, you don't need to use your phone book. Press the **Redial** button.

Ending a call is very easy. If using the handset, put it in its place. This is where the line ends. (The line can only be disconnected by the calling party.) If you are using a speakerphone and a headset, press the **Cancel** function key. Receiving a call is even easier. When the phone rings, pick up the handset. If you want people in your company to hear the conversation, press the **Speaker**

button. If you are using a headset, put the headset on your head and press the **Headset** button. If you do not want to talk to the caller, press the **Rejection** function key.

Sometimes we get harassed on the phone. (Our secret admirer, or our business opponent.) We don't have to put up with this for long. We put the person's phone number on the blacklist. Press the **Menu** function key and scroll down to item **3.Dir** with the **Down** arrow of the Navigator. Press the **Enter** function key, let's go down to the **3.Blacklist** item here as well. Press the **Menu** function key again. Then press the **Group** function button and enter the name and phone number of the banned person in the call list as described above. If the device detects this phone number, it will not ring. (Since the call is still going out, the phone thief will not be suspicious. He thinks we don't pick up the phone or we're not at home.)

If you want to know what kind of traffic was going on on your phone, press the **Menu** function key, then scroll down to item **4.History** with the **Down** arrow of the Navigator. Press the **Enter** function key. The item **1.Local History** is selected. Press the **Enter** function key again. In the list that opens further, by moving with the **Down** arrow, you can view all the calls one by one: **1.All Calls**, **2.Missed Calls**, **3.Received Calls**, **4.Dialed Calls** and **5.Forward Calls**. By pressing the **Enter** function key or the **Enter** key of the Navigator, the list of phone numbers is revealed. After viewing them, individual items can be deleted with the **Delete** function key. (Sometimes it doesn't hurt to clean up so we don't overload our phone.)

A function often used by busy people is **DND** (Do Not Disturb!) mode. Its use is very simple. Press the **DND** function key. The **DND** icon will then become visible on the right side of the display. Until this ban is lifted, the device will not receive calls. We can go to bed in peace. Our nighttime peace is not disturbed by the ringing of the phone. When you wake up in the morning, press the **DND** function button again. The **DND** icon will then disappear from the display and the device will be able to receive again. During the period of the ban, the calling party receives the message from the call center that: The called number cannot be connected temporarily.

Like all digital phones, VoIP is also suitable for call forwarding. This function is especially important for institutions and companies, because often it is not the employee who is responsible for the matter who picked up the phone. In this case, the call will be transferred to the appropriate department. This operation is not complicated either. After receiving the call and clarifying the target person, press the **Transfer** button. The call will then remain on hold. In the box that appears, enter the phone number or the extension to which the call will be forwarded. Press the **Transfer** button. This completes the **Blind Transfer**. (It's called blind transfer because we don't monitor the reception of the call.)

On the other hand, with **Present Transfer**, we keep the process under control. After receiving the call and clarifying the target person, press the **Transfer** button. After that, the call remains on hold here as well. Enter the phone number to which you want to transfer the call in the box, then press the **Send** function key or the **#** key. After that, we indicate to the target person that they want to talk to him.<sup>11</sup> After agreeing, press the **Transfer** button. After that, we disconnect from the line, we cannot listen in on the conversation.

With **Semi-supervised transfer**, we only hear that the call has been answered. It happens in the same way as blind transfer, only we don't hang up the phone immediately, but wait for it to ring and press the **Transfer** button when we are sure that the call has been answered. The advantage of this transfer method is that if the call is not answered, we can tell the calling party that the called party is not there, call later. **Note:** To transfer calls between SIP domains, SIP providers must support SIP domain transfer. A blind transfer usually uses the SIP profile of the primary account.

An important function of VoIP phones is **Call Forwarding**. There are three ways to do this. The first is **Call Forward**. Using this setting, the device immediately forwards all incoming calls to a set phone number (another phone). Press the **Menu** → **Features** → **Call forward** → **Always Forward** function buttons. Then press the **Switch** function key to select the enable option. In the field that appears, enter the phone number to which you would like to be redirected, then press the **Save** function button. The second method of call forwarding is **Busy Forward**. This feature diverts incoming

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<sup>11</sup> This method of call transfer is advantageous because the target person can then deny himself. He asks us to say that he is out of the house.

calls immediately when the phone is busy. Press the **Menu** → **Features** → **Call forward** → **Busy Forward** function buttons. Then press the **Switch** function key to select the enable option. In the field that appears, enter the phone number to which you would like to be redirected, then press the **Save** function button.

The third way to forward calls is **No Answer Forward**. This function redirects incoming calls if the call is not answered after a while. (It rings for a while, and if we don't pick up the phone, it doesn't disconnect the line, but redirects the call to the phone number we specified. Press the **Menu** → **Features** → **Call forward** → **No Answer Forward** function keys. Then press the **Switch** function key on the to select an enable option. In the field that appears, enter the phone number to which you want to be forwarded, then press the **Save** function button. If call forwarding is enabled, the **Forward** icon will appear on the right edge of the LCD display.

Today, landline phones are also capable of sending voicemail and SMS. **Voice mail** and **Text mail** are available with the **Message** button. To configure it, press the **Menu** → **Messages** → **Voice Mail** → **Set Voice Mail** function keys. The appearing **Account No.1** field, our registered phone number appears. To save, press the **Save** function key. Scroll down to the **Set Voice Mail** field and press the **Enter** soft key. After that, we can send and receive voicemail messages. If you want to send it, follow the voice instructions of the call center, say the message, and then hang up the phone. When a voice message is received, the power indicator LED flashes. Press the **Message** button. Follow the voice prompts to listen to your voicemail. To listen to the voicemail afterwards, press the **Menu** → **Messages** → **Voice Mail** → **View Voice Mail** function keys. The LCD display shows all new and old voicemail messages. Selected, we can listen to them one by one. **Note:** This feature is not available on all servers. Contact the service provider for activation. When all new voicemails are retrieved, the power LED will turn off.

Sending and receiving SMS is a mandatory function of all landline phones. (Only cheap analog phones cannot do it.) For Axtel VoIP phones, press the **Menu** → **5.Messages** → **2.Text Message** → **2.Set SMS** buttons. Press the **Enter** function key. Enter your message in the empty field that appears. As already mentioned, this is not easy on a push-button phone, because in order to advance some letters, we have to press some number keys three or four times.<sup>12</sup>

At the beginning of the sentence, switch the entry function key to **ABC**, then set it to **abc** and continue the sentence. The alphanumeric keyboard of the device shows small letters next to the numbers. These must be pressed as many times as we need a letter. If e.g. we want to enter the letter **s**, the **7** key must be pressed four times. If you have messed up the entry, you can delete the wrong letter or number one by one with the **Delete** function key. If it is an intermediate letter or number, use the **Left** and **Right** arrows of the Navigator to move behind it. If you want to delete everything, press the **Cancel** function key. You can put a full stop at the end of a sentence by pressing the **1** key twice. There are also punctuation marks in the text. Luring them is also difficult. Four number keys must be pressed repeatedly until the correct one appears. By repeatedly pressing the **1** key, the **, . ? : ;**, pressing the **0** key is **< > () {} []** pressing the **\*** key is **\* ' / ! @ \$** while pressing the **#** key is **# ' % & \* |** characters are displayed. A major shortcoming of this device family is that it does not output **+** and **-** signals. Their use is essential for writing SMS and performing mathematical calculations. Hungary phone number, e.g. you have to start like this: **+36...** The **=** sign is also missing.

For push-button mobile phones, all the European versions of the typed letter are displayed in one strip. Let's stop at the one we need and it will be included in the text. (Capital letters only appear as initials if you put a point at the end of the previous sentence. Press **#** to add a space after it.) If you need a capital letter during a sentence, press the **\*** button. For push-button cell phones, this is the lower/upper case switch. Since the display of mobile phones is much larger than that of landline phones, the use of punctuation marks is also easier. Press the **0** button. All punctuation marks are displayed here, arranged in a table. (The signs **+** and **-** and **=** are also found among them.) Use the

<sup>12</sup> On smartphones, the entire keyboard is displayed on the screen. So, just like on notebooks and desktop computers, you just need to press the keys.

**Right** arrow of the Navigator to move to the one you need, then press the **OK** button. This is also included in the text.

Punctuation marks can also be displayed in ribbon form. Press the **1** button and use the Navigator **Right** arrow to move forward. Where we stop, the punctuation mark appears in the text. If we messed up a letter somewhere in the text, it is not necessary to delete the entire text and rewrite it. Use the **Left** arrow of the Navigator to step behind the corrupted letter and press the red **Delete** key on the device. (It doesn't hurt to know that the maximum allowed 160 characters is halved in the case of an SMS written with accented letters. Even if it contains only one accented letter.) Seeing this, the developers of landline phones could learn from the developers of mobile phones. An even bigger problem is retrieving accented letters. This is not possible with landline phones. Only 26 letters of the English alphabet can be used here. Our messages must be written without accents. This is due to the two- or three-line display. Developers cannot fit a ribbon font into this tight space.

After you have written the message in the correct language, press the **Send** function button. Our registered phone number appears in the **1.From** field. Use the **Down** arrow to move down to the **To** field and enter the recipient's phone number, then press the **Send** function key again. Change the function key for entering the phone number to **123**. Don't cypher it! The numbers are written close to each other. (The recipient does not have to speculate about who the message came from. If our phone number is in his call list, our name will appear as the sender.) The same must be done when we want to read the SMS sent to us. In this case, after activating the **2.Text Message** → **Enter** instructions, the **1.View SMS** field must be selected. After pressing the Enter function key, the message appears in the empty field. If it is long, you can use the **Down** arrow to scroll down through the text.

A special service of VoIP telephones is conference calls. (In this case, only the improved **Axtel AX-500W** type is suitable for a conference call. The price is HUF 48,000.) This is a call where several people can join the conversation. It is mainly used in professional discussions. If we call someone and they cannot provide us with information, there is no need to disconnect the line and call another expert. He must also be included in the conversation in conference mode. If the opinion of another specialist is needed, he can also be included in the trial. With this device, max. 5 people can participate in the conference. Its implementation is very simple.

AX-200



AX-500W

Assuming that callers A and B are talking and want to include C, D and E in the conversation. If we are the **A** person initiating the call, press the Conference function key. Our conversation with **B** is then put on hold. In the frame that appears, enter the phone number of person **C** and press the **#** key or the **Send** function key. If **C** picks up the phone, press the **Conference** button and **C** is al-

ready in the conference. If a fourth person **D**, is also needed, press the **Hold** function key. This puts the conference on hold. Then press the **New Call** function key and enter the phone number of person **D**, then press the **#** key or the **Send** function key. If **D** answers the call, press the **Conference** button. The conference has already been expanded to 4 people. If another person is needed, person **E** must be called in the same way as person **D**. If one person does not come forward, the others can continue the conversation. If **A** hangs up, ends the conversation, the conference ends. If one of the invited parties hangs up, those who remain inside can continue the conference. **Note:** The conference function is not available on all servers. Contact the service provider for more information. If we have a sufficient routine in handling our device, no matter where we go, we can handle almost all landline phones, because basically they all work this way. They differ only in their additional functions and the layout of their control buttons.

The VoIP phone also allows for anonymous calls. If you do not want the called party to find out, store and pass on our phone number, use the **Hide Caller ID** function. Press the **Menu** → **Features** → **Anonymous Call** function buttons. Then press the **Enter** function key for account identification. Press the **Switch** function key and select **enable** in the **Anonymous Call** field. Finally, press the **Save** function button to save the setting. In case of unmasking, the same must be done, but now the **disable** instruction must be activated in the **Anonymous Call** field. Now press the **Save** function button to save the setting. In the **Rejection** field, we can reject anonymous calls to us in the same way. However, it is not advisable to do this, because we might make it impossible to call an important person.

This guide contains the basic settings and how to use the device. In addition, IP phones have many special settings. Do not look for them in the instructions for use provided by the manufacturer. This palm-sized cheese label does not even properly describe how to use the device. Anyone who wants to take full ownership of their device needs its manual. This 100-page brochure does not need to be requested from the manufacturer, as it is available online. The user manual for Axtel IP phones can be downloaded from this address: [https://axtelworld.de/downloads/Axtel\\_IP\\_Phone\\_AX200\\_User\\_Manual\\_V1.4.pdf](https://axtelworld.de/downloads/Axtel_IP_Phone_AX200_User_Manual_V1.4.pdf)

This description is already sufficiently detailed and precise. The only problem is that it can only be used in English. Anyone who speaks English won't get very far with it either, because it's full of IT terms. Therefore, only system administrators and service professionals can use it. (If we need a function, we enter the unknown technical term in the Google Advanced Search window and we will probably find an explanation for it.) If we are not satisfied with it, write to the service. If you bought the device from the PCX online store, their service can be reached at this address: [garancia@pcx.hu](mailto:garancia@pcx.hu) (The device only needs to be taken to the service if it has malfunctioned. For operational problems, please contact us by e-mail. First at the online store, then at their service. In case of complicated problems, please write to the manufacturer in English. Their email address is: [support@axtelheadsets.com](mailto:support@axtelheadsets.com)

GRP2601



GRP2612





Finally, we should also take a look at the range of IP phones. There are relatively few manufacturers offering a wide range of wholesale products. Along with Axtel, Grandstream is like that. Their specialty is telephones with two SIP accounts. Another great advantage of Grandstream phones is that they are extremely elegant. With their modern, designed appearance, they create a sense of class in our customers. However, they are not expensive. The basic version of the **Grandstream GRP 2601P** is also a two-line model. (You can manage two lines with one phone number. While you are talking on one, the other remains on call waiting. In the case of normal phones with one sound channel or voice channel, the center will give a busy signal in this case.) In order to minimize background noise, it is equipped with noise protection technology.

The 5-way audio conference can even hold a small meeting. All this is topped off with secure boot, dual firmware and encrypted data storage. All this costs only HUF 20,700. The cheapest price offer can be found on the Product Finder. Web address: <https://www.arukereso.hu/> The **Grandstream GRP2612** type has a professional design. Its color LCD display is combined with an HD quality microphone and speaker. This type is four-line, i.e. it can hold 3 audio channels in addition to our line. (This is standard mode at call centers. They play music for us while we wait, and then reassure us every 10 seconds that our turn will be coming soon.) It also includes built-in dual-band Wi-Fi support. Price HUF 27,900.

The German-made **Auerswald Comfortel D-100** IP telephone is a super device. Its precisely designed exterior gives us the feeling of a mini telephone exchange. His services have no end or length. To name just a few of its professional functions: self-labeling function keys including LED indication, environment-sensitive function keys. Number of programmable buttons: 6. Connection of wireless headphones (DHSG/EHS). Incoming calls and missed calls are also clearly visible. 6 SIP IDs/accounts. 3 simultaneous connections. Conference call. Caller ID. Call restriction. Missed calls. Recall. Hold call. Call duration. Microphone mute. Displaying phone numbers and names from the local and central phone book of the communication server or from the cloud PBX. Phone book size: 2000 names + phone numbers. The resolution of the 3-line LCD display is 240 x 128 pixels. Image diagonal: 6.9 cm. Monochrome, with backlight. Another interesting thing about this device is that it does not have a power supply. It receives the power required for its operation from the LAN connector of the router.



#### System functions on the manufacturer's own communication servers:

- Group check-in/check-out
- Do Not Disturb (DND)
- Pick-up Pick up a call
- Call forwarding centrally via the communication server

Online name search (reverse search)  
 Busy light field (BLF) for displaying the call and busy status of extensions  
 Switching central configuration profiles, e.g. day/night shift

#### **Audio Features:**

High speech quality thanks to echo suppression  
 Codecs: G.722 (wideband), G.711 A-law/ $\mu$ -Law, G.726, G.729, iLBC  
 Comfort Noise Generation (CNG)  
 Voice Activity Detection (VAD)  
 Full duplex handsfree  
 22 ringtones  
 The ringer, handset, headset and hands-free volume can be adjusted separately.  
 RJ45 headphone jack for wireless and wired headphones with DHSG/EHS support

#### **Safety:**

Password protected web interface  
 HTTPS server/client  
 SIPS (RFC 3261) encrypted signaling  
 SRTP (RFC 3711 / RFC 4568) encrypted transmission of voice data  
 Transport Layer Security (TLS)  
 VLAN (IEEE 802.1q)

#### **Administration:**

Localization including language, time, date and sounds  
 Configuration via web browser (HTTPS)  
 Bulk installation via provisioning server:  
 Auerswald redirect server  
 DHCP options 66/67  
 Configuration update with SIP notification without restarting the phone  
 Transfer settings using HTTP/HTTPS/TFTP

Auerswald Comfortel D-100 price: HUF 26,800. It is incomprehensible how they were able to cram so much into this device and how they can sell it so cheaply. Distributor: **Bestmarkt** 1094. Budapest Ferenc tér 5. Tel: +36 1 444 9999 Web: [www.bestmarkt.hu](http://www.bestmarkt.hu)

As you can see, the selection is huge. Everyone can choose the phone they like best. When choosing, it is good to take into account one more aspect that can tip the scales towards analog phones. From the above, it turned out that analog phones are not of the best quality. However, they have one big advantage: safety. With the video phone (Skype, Viber) we can only reach our relatives and friends if their computer is switched on. The VoIP phone only works as long as the service provider's server is functional. (Vodafone's server crashes every two months. It takes many hours to fix it.) In such cases, the IP phone does not work either. The analog telephone connected to the router can also be used in this case, but only if there is electricity in our apartment. If a major short circuit at the end of the street blows out the fuse, they can usually fix the malfunction only the next day. Without power, the router becomes inoperable.

However, the analog telephone can be operated not only via a router, but also when connected to a wall socket. In this case, the device is powered by a network of thin copper wires. The call center approx. It feeds a voltage of 80 V to the bundled copper wires. This phone network is guaranteed 24 hours a day. It only stops for a few hours when a grapple machine tears the underground cable. A power cut does not threaten the use of the telephone either, because every big city is supplied with electricity by two power plants. If one fails, the other continues to provide power. The consumer notices nothing of this. In the early days of the telephone, there was no need for a central power

supply. The subscribers themselves took care of generating the energy needed for the conversation. The first telephones were inductors. A small dynamo was built into the devices, which was wound with a crank. The electricity developed in this way operated the telephone. LB (Local Battery) phones are now only seen in museums, but they may very well be needed soon.

This telephone network also works in case of an emergency. The II. During World War II, most cities had no water, electricity, or gas. There was a phone though. The telephone exchange was supplied with electricity by an aggregator. This did not require a lot of fuel because analog phones use very little electricity. In the current crisis-laden times, a permanent power outage can occur anywhere, at any time. Not only because of the world war lurking on us, but also because of various natural disasters. In this case, we won't do anything with the wireless mobile phone either, because they have to be charged daily. If high-tech goes bankrupt, it can save the lives of more than a hundred years of low-tech.

Budapest, March 11, 2023.

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