



Innovative
Versorgungstechnik GmbH



Digital Sine
Wave Inverter Series DSW

**DIGITAL INSIDE.
CONSTANT OUTSIDE.**



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(Misprints and errors excepted)

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PRICE MEETS PERFORMANCE/ OUR PROMISE



Dear business partner,

As a German family business with special, branch-specific insider know-how, IVT has offered you technical innovations to a more than fair cost-benefit ratio for decades. IVT inverters are designed in a way which allows adaptation to the individual requirements by means of numerous accessories. This means that you only pay for components that you actually need.

German engineering in conjunction with development and manufacturing in EU countries grant a high quality standard, onto which our customers can rely.

A standard which allows us to offer a 3 year manufacturer warranty on each of our products. Thus, today IVT stands for reliable technology in the scope of inverters, voltage converters, solar- and charging technology as well as portable light.

We are convinced that only technically innovative, durable and precise products deserve the brand IVT. You can rely on this!

Should you additionally require product developments (OEM) according to your own specifications or custom-made versions, please don't hesitate to contact us. We gladly make time for counseling you.

With best regards



Managing Director
Product development



Managing Director
Marketing/Sales

VERSATILE SAFE PRECISE ROBUST INDIVIDUAL

Whether stationary or mobile – the Digital Sine Wave Inverters by IVT are versatile in their application. The wide power range and the considerable amount of accessories allow for an exact customizing to your requirements.

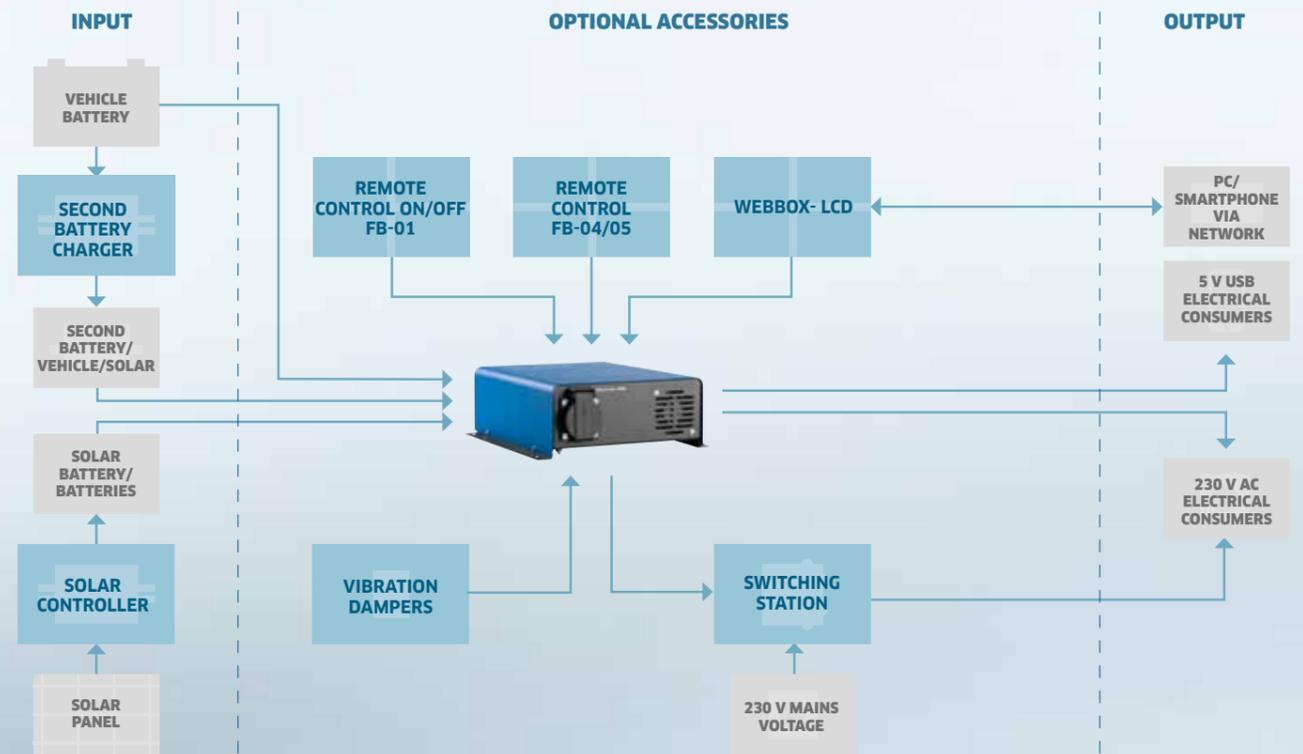
Galvanic isolation, short circuit and overload protection – with these and further standard safety features you can always rely on your IVT inverter, whenever it matters.

For sensitive electrical consumers such as measuring instruments, pumps, appliances with electronic control, TV sets or monitors, a true sine wave, and a stable output voltage are strictly required. Thanks to their precision, IVT inverters always provide a safe and failure-free power supply.

The robust and well-made design makes IVT inverters suitable for the use in calamity and rescue operations as well as in the fields of craftsmanship and repair service. Of this, we are convinced. Thus, we offer a 3 year manufacturer warranty on all IVT products.

Sometimes individualized solutions are required. Gladly we modify our products to suit your expectations or manufacture products according to your requirements.

VERSATILE/ IN ALL RESPECTS



Individualized and flexible.

For inverters exist numerous fields of application – consequently our customers' requirements regarding our devices are as versatile. With this knowledge in mind, the models of our Digital Sine Wave series were created in different versions and various power ranges. While they meet the highest technical standards at the same time. After choosing the suitable inverter model, you can decide flexibly where, how and with what accessories you would like to operate your inverter.

Portable and stationary application:

Whether stationary or mobile – with the IVT inverters almost everything is possible. With them, you can work entirely autarchic. As they offer an independent power supply wherever it is needed: on the go or stationary, stand-alone or in combination with alternative energy sources such as solar or wind power.

Individualized power range:

Our inverters offer a performance spectrum between 300 – 2000 W continuous output power in order to always provide you with the needed power.

Should this, however, not be sufficient enough, you have the option to connect 2 DSW-2000-Synchron units in parallel. With this, you achieve a continuous output power of 4000 W.

Safe output – 230 V shockproof socket:

As a standard, all Digital Sine Wave Inverters are equipped with a 230 V shockproof socket. A country-specific adaptation is possible upon request.

Standard 5 V USB terminal:

All Digital Sine Wave Inverters are equipped with a 5 V USB terminal suitable for supplying external devices such as mobile phones, tablets, cameras or navigation devices with power.

E-mark certification:

Our Digital Sine Wave Inverters comply with the legal provisions of the ECE regulations and are thus E-mark certified. They are suitable for permanent installation in vehicles licensed for public traffic, regardless if passenger cars, utility vehicles or other vehicles with 12 V respectively 24 V operation voltage.

Original IVT accessories for more comfort and safety:

At IVT, you will always find matching, high quality accessories – from specially adapted connection cables for the DSW-series to remote control devices, both cable-connected and radio frequency-based, the Webbox for permanent surveillance of the live data, all the way to the vibration-absorbing vibration dampers for application during extreme conditions (construction, off-road, service and maintenance vehicles).

12 V or 24 V versions:

Depending on the system voltage of your vehicle or your solar system, IVT inverters are available with 12 V or 24 V direct current voltage input.

36 V or 48 V:

Aside from our standard product line, we gladly provide inverters with 36 V or 48 V direct current voltage input upon request.

High peak output power:

Particularly when using electrical consumers which require a high inrush current, the start-up process doesn't always run smoothly. For this reason, our inverters are designed to achieve a twice the rated continuous output power for a short period of time.

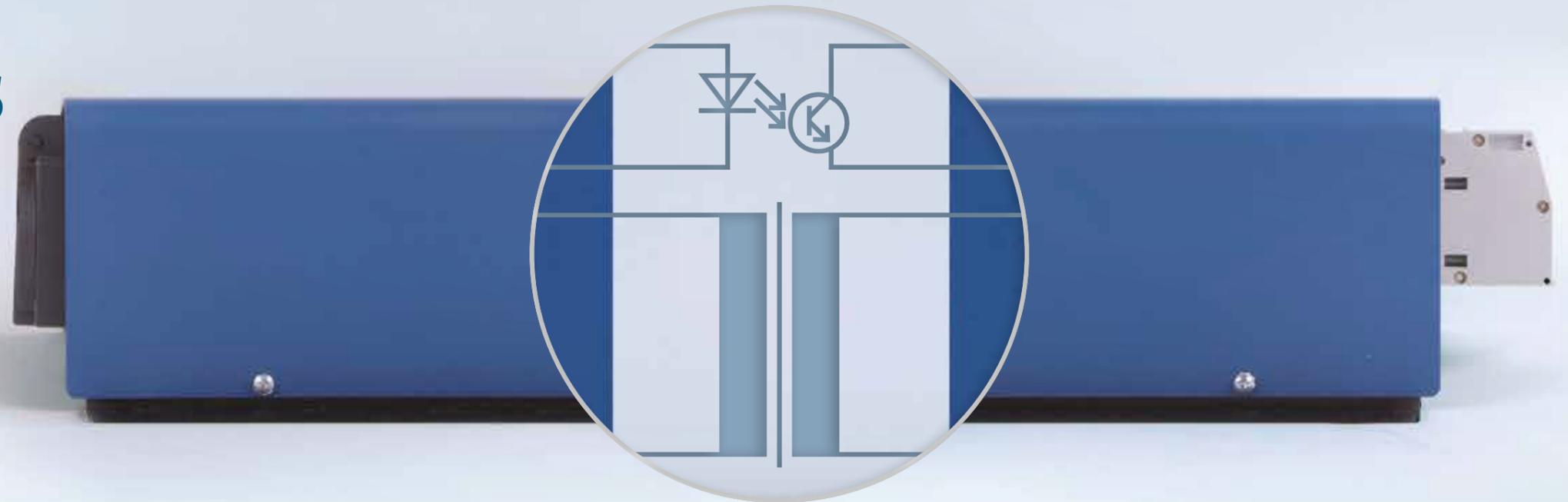


- 1 Temperature and power controlled ventilator
- 2 12 V resp. 24 V connection terminal for the battery
- 3 DIP switch for standby function and addressing
- 4 Terminals for remote control FB-04 and FB-05
- 5 Terminal for remote control FB-01
- 6 USB charging terminal (5 V)
- 7 Control indication for input and output voltage
- 8 Main switch ON/OFF



To determine the adequate inverter, you need to assess your total power requirement. It consists of the sum of all rated powers (W or VA) of each electrical consumer. We recommend to allow for an additional power reserve of 30 – 40 % (more information may be found on the pull-out back cover).

SAFE/ WHEN IT MATTERS



For professional applications.

Whether in professional applications in craftsmanship, in the industry or in the service sector, we know that you want and have to rely on your inverter. And you can do that! Our Digital Sine Wave Inverters are standardly equipped with:

Galvanic isolation (see figure above):

Thanks to galvanic isolation, there is no conducting electrical connection between the input and the output circuit. Thus, even for professional applications, no additional personal protection device (FI or DI switch) is required. Furthermore, the inverters of the DSW series fulfil the safety regulations of the Employers' Liability Insurance Association. With this, they are eminently suitable for commercial applications.

Extensive protective features:

IVT inverters provide protection against reverse polarity and overvoltage on the input side as well as short circuit and overload on the output side. In case of overheating, the unit will shut off automatically.

Temperature and power controlled ventilation:

The built-in ventilators are power and temperature controlled and, therefore, always grant a perfect cooling. Thanks to this temperature control, they will only turn on when required. This way, the noise level can be minimized.

Dynamic deep discharge protection:

On one hand the dynamic deep discharge protection assures the protection of the battery against deep discharging, on the other hand it allows for loads with high inrush current, as it lowers the shut-off threshold for a short period of time. With the optionally available remote controls FB-04, FB-05 and the Webbox-LCD, it is additionally possible to adjust the deep discharge protection to your requirements. A voltage between 9 V and 12 V (for 12 V models) respectively 18 V and 24 V (for 24 V models) may be chosen. When the set threshold is reached, the inverter displays this by means of flashing LEDs on the front panel. Subsequently, the load output of the inverter will automatically shut off. Only if the battery reaches the restart voltage, the load output will be reactivated.

Standby function:

If the inverter isn't used for a longer period of time, the optionally selectable standby function allows for the reduction of the internal current consumption by approximately 90 %. Thus, the unnecessary discharging of the battery is prevented.

Power start function:

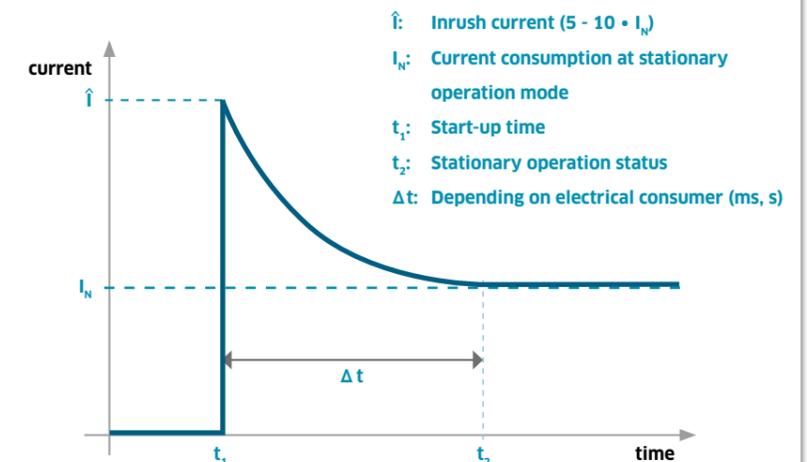
All devices are standardly equipped with the power start function. Critical electrical consumers with extremely high inrush current, as for example compressors or pumps, will be repeatedly triggered in short intervals 3- to 5-times with the maximum output power, in order to achieve a reliable start-up.



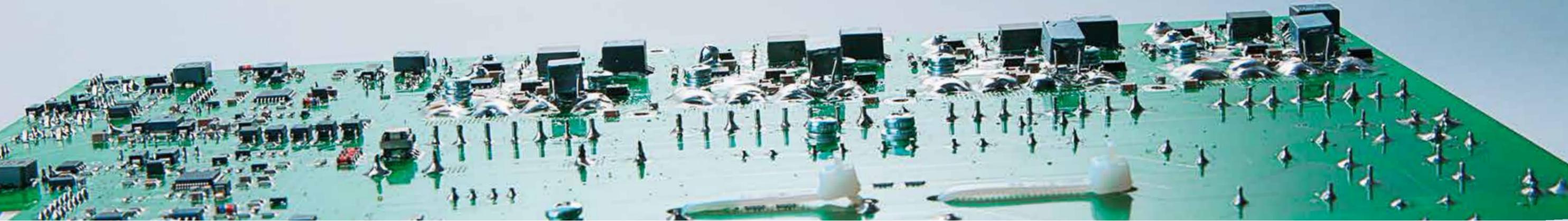
Inrush current:

During the start-up of an electrical consumer, the inrush current can reach 5- to 10-times the rated current.

The power start function tries to compensate this phenomenon by generating 3 to 5 start-ups within short intervals with the maximum load output.



PRECISE/ DOWN TO THE SMALLEST DETAIL



We are very accurate.

Nearly all modern electronic devices require a precise input voltage in order to achieve their full performance abilities. With their precise construction IVT's Digital Sine Wave Inverters fully meet these expectations.

True sine wave output voltage:

All IVT inverters of the DSW series convert a battery voltage of 12 V respectively 24 V into a true sine wave alternating voltage of 230 V/50 Hz at the output. Thus, even sensitive electrical consumers such as notebooks, TV sets and charging or measuring devices may be operated safely, precisely and reliably.

Compact design:

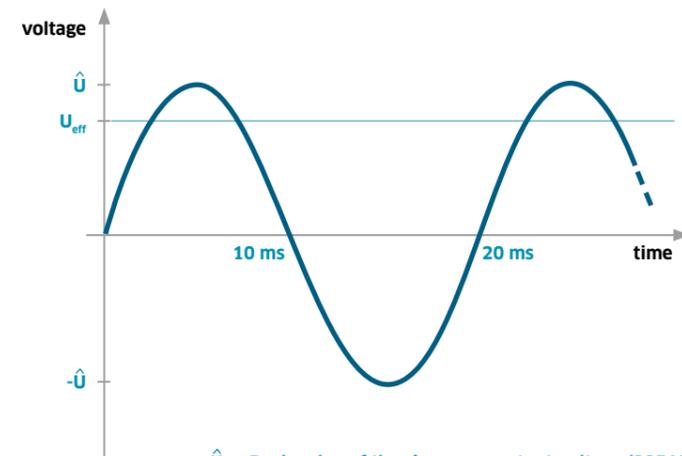
By using surface mounted components, the so called SMD-elements, a compact, both-sided mounting of the PCB (printed circuit board) is rendered possible. An automatic SMD mounting not only assures a more compact design and with it the minimized product weight, but also grants a permanently high quality.

Microprocessor controlled electronic:

The microprocessor is the core of the inverter. This control center surveilles the most important electronic parameters, such as input voltage and frequency. Thus, a constantly stable output voltage is granted.



The digital control creates a true sine wave output voltage of 230 V/50 Hz from a 12 V resp. 24 V direct current voltage:



\hat{U} : Peak value of the sine wave output voltage (325 V)

U_{eff} : Effective value of the sine wave output voltage (230 V)

ROBUST/ RELIABLE & LIGHT IN WEIGHT



High quality expectations require strict quality control.

Inverters are often subject to high encumbrances and must function absolutely reliably under difficult conditions. For this reason, we use quality components for all IVT devices, impose the highest demands on the manufacturing process and test each product thoroughly before starting serial production.

Solid metal housing - always well protected:

The valuable interior of the inverter is protected by a solid and sturdy metal housing. Thanks to the mounting rail, it can be stably fixed everywhere.

Innovative technology - light in weight and highly efficient:

Conventional inverters are often equipped with big toroidal transformers. Consequently, they are heavy and bulky. Contrary to this, the microprocessor controlled IVT inverters operate digitally thanks to their innovative technology: big, heavy components become redundant and are replaced by small and highly productive ones.



Quality commitment - 3 years manufacturer warranty:

IVT products are manufactured with high quality, in accordance with strict quality guidelines.

We are so convinced of the longevity of our products that we extend the legally required manufacturer warranty by another year, free of cost.

Ready for use - even at extreme temperatures:

A Digital Sine Wave Inverter by IVT is always ready for use, even under extreme temperatures conditions. At temperatures between -25 °C and +40 °C it achieves 100 % of its continuous output power. At +60 °C a rated power of 66 % is still available.

Vibration dampers - protection against vibration damage:

IVT products are inherently resistant and durable. Additionally, the inverters can be protected cost-effectively by vibration-absorbing vibration dampers. We recommend the use of vibration dampers for off-road applications, construction appliances, construction vehicles as well as for the use in agriculture and forestry - this means, whenever the vehicle will be thoroughly shaken.



INDIVIDUALIZED/ DESIGN & PRODUCT DEVELOPMENT (OEM)



Various areas of application require individualized customization.

During the development of our products, it is our main focus to address as many customer requirements and areas of application as possible but always at a fair cost-benefit ratio. This way, IVT creates versatile, robust, precise and safe products. Should you additionally have special wishes and requirements regarding our products, we gladly adapt them according to your specifications or develop individualized solutions.

Individualized branding & design:

You would like our products in an individualized housing or design, printed with your own logo and your product name. We will do it!

Individualized product development:

Should the product you require not even exist in this particular version, we develop it according to your specifications.

Individualized technical features:

We are able to achieve almost every desired modification on already existing products.

Some of the most requested examples are:

- Country specific adaptation of the sockets and connection terminals
- Voltage adaptation
- Enhancement or increase of the protection type and much more.

Individualized accessories:

Should you further require special accessories or wish to have the already offered accessories modified or branded, we gladly do it for you.

Personal counselling:

We gladly make time for counseling you regarding individualized solutions by phone or in-house. We are available

Monday to Thursday from 8.00 -17.30, Friday from 8.00 -15.30

under the following phone number:

+49 (0) 9622 71991-0

Extended warranty:

Self-evidently we also grant a 3 year manufacturer warranty on all products which are built and designed according to your wishes and specifications.

Successful application:

For over 20 years, IVT has been operating successfully in the scope of inverters, voltage converters, solar technology and portable light. Thus, it is no surprise that our products are used in many industries - often adapted to the individualized requests of our customer.

Modified IVT inverters are already used in the following areas of application:

- Vehicle equipment
- Air traffic
- Construction vehicles and equipment
- Seawater conditioning systems
- Communication systems
- Development aid

PORTABLE APPLICATION/ LEISURE



Flexible and independent off- and on-shore.

If you require a reliable power supply on the go, choose an IVT inverter. Thanks to the true sine wave output voltage, it supplies your sensitive electrical consumers just as failure-free as the mains socket at home.

In combination with a small solar isle system (12 V or 24 V) you can autarchically generate your own power. We recommend to use a solar panel, one of our highly efficient MPPTplus+ solar controllers, a second battery charger as well as a cycle-proof second battery.

The IVT DSW inverters and the MPPTplus+ solar controllers can comfortably be controlled, parametrically adjusted and surveilled by only one remote control. The touch screen remote control is available as a cable-connected version (FB-04) and as a radio-frequency based one (FB-05). For more information please see page 38.



Recommended accessories: second battery charger, remote control, vibration damper.

Comfort to go.

Take a coffee break.

You don't want to miss the comfort of home when travelling? With an IVT inverter in your camper or sailing boat you are able to operate your coffee maker, your hot water boiler and your air conditioning device reliably and safely. Thus, you can also enjoy the comfort of the pleasant things in life when you are out and about.



Simply pack everything.

Many small devices, which make life easier, require a 230 V alternating voltage supply: a hair dryer, an electrical toothbrush or an electrical shaver for example. For devices like these, IVT offers inverters with a power spectrum between 300 W - 4000 W. Thus, you can also take high-powered electrical consumers with you and operate them failure-free on the go.



Online in the Outback.

A location-independent internet connection via satellite allows for planning your routes more flexibly, for always being informed about the current wind and weather conditions or simply for sharing your vacation pictures. With the proper equipment in your vehicle, this is no problem: a solar panel on the roof, a second battery, a second battery charger, a solar controller and an IVT inverter supply autarchically all your electrical consumers wherever you travel.



PORTABLE APPLICATION/ CRAFTSMANSHIP & SERVICE



Your job is our job.

At work, things must happen quickly: repairs have to be urgently made, often without mains net connection, on the road, off-road or on open field. Furthermore, when transporting easily perishable food, medical products or specific chemicals, the cooling chain must not be interrupted.

In these cases, the Digital Sine Wave Inverters offer the most user-friendly and time-efficient solution when it comes to power supply. To always operate your cooling system or your powerful electrical tools reliably, 2 devices of the synchronic version with a total output power of 4000 W are available.



Recommended accessories: second battery charger, remote control, vibration damper.

Always be on alert.

Outdoor work often requires a mobile solution for power supply – regardless of location and time. An IVT sine wave inverter allows for a smooth operation of an angle grinder, a saw or a hammer drill, for example via the emergency vehicle's car battery.

Never run out of air.

Compressors are required for the operation of numerous devices, such as pressure tools. With an IVT inverter, you can also run your compressor on the go. The power start function offers an additional advantage. As it allows for the start-up of electrical consumers with high inrush current.

Safe and efficient.

During high water submersible pumps must be quickly ready for use. In case of power failure or if the mains net cannot be employed for safety reason, a DSW inverter provides the necessary power immediately and safely. Due to the galvanic isolation, no additional personal protection devices are required. All models fulfil the safety regulations of the Employers' Liability Insurance Association.

E-mark certification.

Our Digital Sine Wave Inverters comply with the legal provisions of the ECE regulations and are thus E-mark certified. Therefore, they are suitable for permanent installation in vehicles licensed for public traffic, regardless if passenger cars, utility vehicles or other vehicles with 12 V respectively 24 V operation voltage.



PORTABLE APPLICATION/ COMMERCIAL VEHICLES



Always on the road.

On long-distance journeys, where you almost live in your bus or truck, you surely would like to have the things which make life more comfortable and enjoyable at home at your disposal, as well. With an IVT Digital Sine Wave Inverter you can operate all your electrical devices on the highest safety standard with a 230 V true sine wave voltage. For the special user comfort, various remote control devices are available. With them, everything is in your hands: from switching the inverter on/off to reading its parameters.



Recommended accessories: second battery charger, remote control, vibration damper.

On the go at home.

Relax and enjoy.

At the end of the driving period, you want to relax with a fresh cup of coffee, watch TV or simply prepare a warm meal? An IVT inverter in your vehicle makes it possible to use the same devices in your truck's cabin as at home on the regular mains net. Thus, you can truly enjoy your resting period far away from the next truck stop or hotel.



Make the most of your rest periods.

On long-distance bus journeys a portable power supply is especially recommendable. IVT's Digital Sine Wave Inverters provide the power you require comfortably and safely, for example to vacuum clean the seats and isles during breaks or operate a TV set, a notebook or a WLAN router.



A service to impress.

In order to offer your customers a premium class service, a well-equipped board kitchen is a key prerequisite. Regardless, whether you want to connect a high quality espresso or coffee maker, a microwave oven, a portable stove or a sausage maker. Regular 230 V devices, which can be operated with an inverter, are significantly more cost-effective than special 24 V devices, which are adapted to the board system. Furthermore, it is possible to use conventional devices instead of being restricted to the small selection of available 24 V kitchen appliances.



PORTABLE APPLICATION/ EMERGENCY & RESCUE



No time to loose.

In critical situations, when every second counts, clear view is essential at the operation site. Lighting systems and electronic devices must be ready for use immediately. In such cases, Digital Sine Wave Inverters provide a 230 V true sine wave alternating voltage reliably and safely.

Thanks to the E-mark certification and galvanic isolation, the use of inverters from the DSW series is permitted in all emergency vehicles of official authorities and organizations with security duties. Among others, they are suitable for fire services, rescue crews, police, customs, aid organizations, civil and calamity protection organizations such as the technical relief as well as dog rescue units.



Recommended accessories: second battery charger, remote control, connection cable.

A true friend and helper.

Moving a deluge of water.

To operate waste water pumps, in case of flood or storm tide: the technical relief unit and the fire service must operate powerful pumps location-independently, quickly and safely. IVT inverters provide the required power reliably - even if the regular mains net is not available.

Assure security.

A portable power supply is indispensable in emergency vehicles of police, customs and other organizations with security duties. Sine wave inverters allow for a reliable and failure-free operation of 230 V electronic consumers, as for example devices for traffic control. But also to provide light at an accident and danger site, for an autarchic electricity supply of notebooks and printers, an IVT inverter is best suitable.

Search, rescue, aid.

Dog rescue units are often employed for searching in rough terrain or in distant forest areas. A public mains net is seldom available. Possibly, the mains net supply at the scene is impaired by an avalanche or landslide.

In order to grant an efficient operation coordination in each situation, an autarchic power supply is indispensable: notebooks must function failure-free, maps with distinct search areas must be printed, hand lamps and two-way radios must be recharged. Thanks to an IVT inverter all necessary devices will function just as reliably and safely as on the regular 230 V mains net.



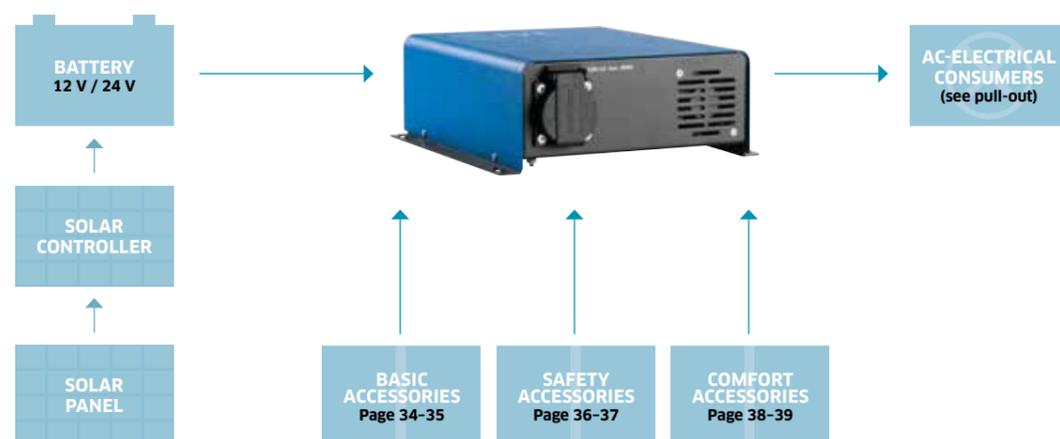
STATIONARY APPLICATION/ AGRI- & AQUACULTURE



Autarchic and versatile.

Regardless, whether you search for an autarchic solution to illuminate your stable or whether you want to operate automatic feeding units, electrical tools or pumps apart from the mains net – in the fields of agriculture, forestry and aquaculture a DSW inverter can prove its versatility.

The robust design and the quality workmanship always grants a reliable supply with a 230 V true sine wave voltage.



Recommended accessories: second battery charger, remote control, connection cable, switching station.

For man and livestock.

No more dry spells.

Portable and stationary pumps play a central role when it comes to livestock watering, fish transportation and well systems. An inverter provides the necessary power supply in secluded locations. Thus, water arrives where it is needed.



Saving in the right places.

With an autarchic power supply in your stable you can not only operate your illumination cost-effectively and environmental-friendly, but also your automatic feeding units, chargers or electronic tools, such as clippers or electric trimmers.



More security.

The necessity of more security on especially remote premises is big. The installation of a camera system for the surveillance of your stables or of an alarm system for your weekend home with a solar isle system in combination with an IVT sine wave inverter is easily accomplished and reliable.



i If you electively want to use power from your solar isle systems or the 230 V mains net, we recommend the installation of a switching station. If it can provide sufficient electricity, your solar isle system, in combination with an inverter, is able to fulfill the function as a stand-alone power supply with a 230 V true sine wave alternating voltage. If not, the IVT switching station will automatically switch to the regular 230 V mains net.

STATIONARY APPLICATION/ HOBBY & LEISURE



Autarchic – thanks to energy generation from solar & wind power.

You would like to supply your own power autarchic, for example in your hunting or forest cabin, in an alpine region, far away from civilization or in your allotment garden? Solar and wind power systems usually produce direct current voltage. Sensitive electrical consumers almost always require a true sine wave 230 V alternating voltage. For such cases an inverter is indispensable.

An IVT sine wave inverter brings the comfort offered by electrical appliances of your home to the most secluded locations. With their great capacity bandwidth between 300 W – 4000 W you can comfortably use TV sets, notebooks or electronic tools.



Recommended accessories: remote control, connection cable, webbox.

Efficient and environmental-friendly.

Use solar power for your gardening tools.

With the power generated by the solar or wind power system in your allotment garden, you can operate your electric tools cost-effectively and energy-saving. Furthermore, you avoid the burdensome carrying back and forth of the hedge clippers, electric lawn mower and other heavy, bulky electric equipment. This way, you can always use exactly the devices you want.



Comfortable like home.

Make yourself comfortable, even in secluded locations. With a sine wave inverter you are able to operate cooling systems, electric stoves respectively barbecue grills or a small electric heater apart from the mains net. You can use the same appliances as at home on the main socket and, thus, you have the same comfort available which you are accustomed to and have come to appreciate.



Good entertainment.

You want to watch TV, listen to music or even project a picture or movie onto a big screen, away from the mains net? Modern entertainment electronics react most sensitive to failure in the power supply. With our inverters' true sine wave 230 V voltage, sensitive electrical consumers are not only safely supplied, but it grants a disturbance-free image on all monitors and avoids ground loops on audio devices.



Our tip:

The IVT Webbox-LCD as well as the remote control units FB-04 and FB-05 are suitable for the DSW inverters and for the MPPTplus+ solar controllers. They allow for a permanent surveillance and control of the system's parameters in your autarchic power supply system and assist you in creating your current account balance.

POWER STATION/ STOCK UP ON POWER



Power Station PS-300 – Your power to go.

The portable Power Station PS-300 is your mains socket on the go. Regardless, if you want to operate 12 V or 230 V electrical consumers. The 12 V respectively 230 V load output can either be used separately or simultaneously. This way, you can operate a notebook and a 12 V cell phone charger at the same time.

The high quality AGM battery with 12 V/20 Ah can be charged comfortably at home on the 230 V mains net or in your vehicle using the 12 V charging cable. A practical LED-indicator always informs you of the charging status of the Power Station.

The integrated 300 W sine wave inverter provides a true sine wave voltage, just like the regular mains net. With this, the Power Station guarantees that your sensitive electrical consumers are operated failure-free and safely. Thus, you can install a flash device or a light system everywhere in order to achieve the perfect setting for your photos – ideally for weddings, coverage or animal photography.

The start-up of powerful electrical consumers up to 300 W is supported by the power start function of the integrated inverter. Thus, it is easily possible to provide cool drinks from your cooling box on a camping trip.

The PS-300 is short circuit proof and protected against deep discharge and overload.

Average operation time of electronic devices with the Power Station:

- Conventional TV sets with 102 cm monitor diameter: approx. 3 h
- Stereo systems with subwoofer: approx. 3 h
- 40 W light: approx. 3.5 h
- Flash device with 180 Ws: approx. 900 flashes



Delivery content:
Power Station PS-300
Battery charger 12 V/2.7 A
12 V charging adaptor
User manual

Absolutely short circuit proof

With deep discharge protection and overload shut-off

With integrated 300 W sine wave inverter



Echt Sinus



Technical data	Power Station PS-300
General	
Battery type	12 V 20 Ah AGM (Absorbent Glass Matt)
Battery charger	230 V AC, 13.8 - 14.7 V DC, max 2.7 A
Charging adaptor	12 V DC, 12 - 14.4 V DC, max 5 A
Fuse charging adaptor	F 5 A; 6.3 x 32 mm
Cable length 12 V-charging adaptor	150 cm
Dimensions	240 x 145 x 215 mm
Weight	10.4 kg
12 V DC Output Maximum output current	
Maximum operation time at 10 A	10 A
Idle current	85 min. at full battery
Deep discharge protection	4 mA
Fuse	yes
Output voltage	T10 A (accessible from outside)
230 V AC Output	
Output voltage	225 V AC (+5/-8 %) 50 Hz
Continuous output power	max. 300 VA
Power factor	cos phi > 0.8
Continuous output current	1.4 A _{eff}
Maximum operation time at 300 VA	30 min. at full battery
Idle input power	3.6 VA
Deep discharge protection	yes
Overload shut-off	yes
Order no.	430100



- 1 Battery charger
- 2 230 V AC output
- 3 12 V DC output
- 4 Switch for 12 V DC output
- 5 Switch for 230 V AC output
- 6 12 V DC Charging cable

DIGITAL SINE WAVE INVERTER MODELS 12 V/ MODEL OVERVIEW & TECHNICAL DATA



Technical data	DSW-300/12 V	DSW-600/12 V	DSW-1200/12 V	DSW-2000/12 V	DSW-2000/12 V Synchron
Input					
Rated voltage DC	12 V				
Voltage range DC	11 - 16 V				
Rated input current	25 A	50 A	100 A	200 A	200 A
Input current max.	31 A	62 A	124 A	248 A	248 A
Deep discharge protection voltage, idle	10.5 V				
Deep discharge protection voltage, rated power	9.5 V				
Deep discharge protection voltage, adjustable*	9 - 12 V				
Pre-warning deep discharge shut-off	1 V above shut-off voltage				
Reactivation voltage	12.5 V				
Shut-off overvoltage	16 V				
Rated power, idle	4 W	5 W	6 W	10 W	10 W
Rated power, standby	0.4 W				
Output					
Output voltage AC ($\pm 2\%$)	230 V _{eff}				
Frequency ($\pm 1\%$)	50 Hz				
Signal characteristic	Sine wave				
Continuous output current	1.3 A _{eff}	2.6 A _{eff}	5.2 A _{eff}	8.7 A _{eff}	8.7 A _{eff}
Continuous output power	300 VA	600 VA	1200 VA	2000 VA	2000 VA
Peak output power (max. 2 s)	600 VA	1200 VA	2400 VA	4000 VA	4000 VA
Power factor	cos phi > 0.8				
Rated efficiency	90 %	90 %	90 %	90 %	90 %
Standby activation, output power	< 50 VA	< 70 VA	< 80 VA	< 50 VA	< 50 VA
General					
Output terminal	shockproof socket 230 V AC				
Output terminal USB (Type A)	5 V/500 mA DC				
Temperature range (66 % rated power)	-25 °C to +60 °C				
Temperature range (100 % rated power)	-25 °C to +40 °C				
Standby function	selectable	selectable	selectable	selectable	selectable
Galvanic isolation (in-/output)	yes	yes	yes	yes	yes
Power start function	yes	yes	yes	yes	yes
E-mark certification	yes	yes	yes	yes	yes
Remote controllable	yes	yes	yes	yes	yes
Dimensions (length x width x height)	263 x 164 x 88 mm	277 x 234 x 88 mm	391 x 234 x 88 mm	391 x 334 x 88 mm	391 x 334 x 88 mm
Weight	1.8 kg	2.9 kg	3.5 kg	4.8 kg	5.2 kg
Order no.	430101	430103	430105	430107	430109

*only with FB-04/FB-05 or Webbox-LCD

i Synchronic version:
In order to achieve a continuous output power of 4000 W, two DSW-2000-Synchron Inverters can be connected in parallel and synchronized by means of the additional connection terminal. The two inverters may also be operated as single units with a continuous output power of 2000 W.

Please order the connection cable separately.



i Suitable accessories are available on the pages 34 - 39.
The dimensions of all Digital Sine Wave Inverters are available on the pages 32 - 33.

i In the synchronic operation mode each DSW-2000-Synchron requires its own set of connection cables.

DIGITAL SINE WAVE INVERTER MODELS 24 V/ MODEL OVERVIEW & TECHNICAL DATA



Technical data	DSW-300/24 V	DSW-600/24 V	DSW-1200/24 V	DSW-2000/24 V	DSW-2000/24 V Synchron
Input					
Rated voltage DC	24 V				
Voltage range DC	22 - 32 V				
Rated input current	12.5 A	25 A	50 A	100 A	100 A
Input current max.	15.5 A	31 A	62 A	124 A	124 A
Deep discharge protection voltage, idle	21 V				
Deep discharge protection voltage, rated power	19 V				
Deep discharge protection voltage, adjustable*	18 - 24 V				
Pre-warning deep discharge shut-off	1 V above shut-off voltage				
Reactivation voltage	25 V				
Shut-off overvoltage	32 V				
Rated power, idle	4 W	5 W	6 W	10 W	10 W
Rated power, standby	0.4 W				
Output					
Output voltage AC ($\pm 2\%$)	230 V _{eff}				
Frequency ($\pm 1\%$)	50 Hz				
Signal characteristic	Sine wave				
Continuous output current	1.3 A _{eff}	2.6 A _{eff}	5.2 A _{eff}	8.7 A _{eff}	8.7 A _{eff}
Continuous output power	300 VA	600 VA	1200 VA	2000 VA	2000 VA
Peak output power (max. 2 s)	600 VA	1200 VA	2000 VA	4000 VA	4000 VA
Power factor	cos phi > 0.8				
Rated efficiency	90 %	90 %	90 %	90 %	90 %
Standby activation, output power	< 50 VA	< 70 VA	< 80 VA	< 50 VA	< 50 VA
General					
Output terminal	shockproof socket 230 V AC				
Output terminal USB (Type A)	5 V/500 mA DC				
Temperature range (66 % rated power)	-25 °C to +60 °C				
Temperature range (100 % rated power)	-25 °C to +40 °C				
Standby function	selectable	selectable	selectable	selectable	selectable
Galvanic isolation (in-/output)	yes	yes	yes	yes	yes
Power start function	yes	yes	yes	yes	yes
E-mark certification	yes	yes	yes	yes	yes
Remote controllable	yes	yes	yes	yes	yes
Dimensions (length x width x height)	263 x 164 x 88 mm	277 x 234 x 88 mm	391 x 234 x 88 mm	391 x 334 x 88 mm	391 x 334 x 88 mm
Weight	1.8 kg	2.9 kg	3.5 kg	4.8 kg	5.2 kg
Order no.	430102	430104	430106	430108	430110

*only with FB-04/FB-05 or Webbox-LCD



Synchronic version:

In order to achieve a continuous output power of 4000 W, two DSW-2000-Synchron Inverters can be connected in parallel and synchronized by means of the additional connection terminal. The two inverters may also be operated as single units with a continuous output power of 2000 W.

Please order the connection cable separately.



Suitable accessories are available on the pages 34 - 39. The dimensions of all Digital Sine Wave Inverters are available on the pages 32 - 33.

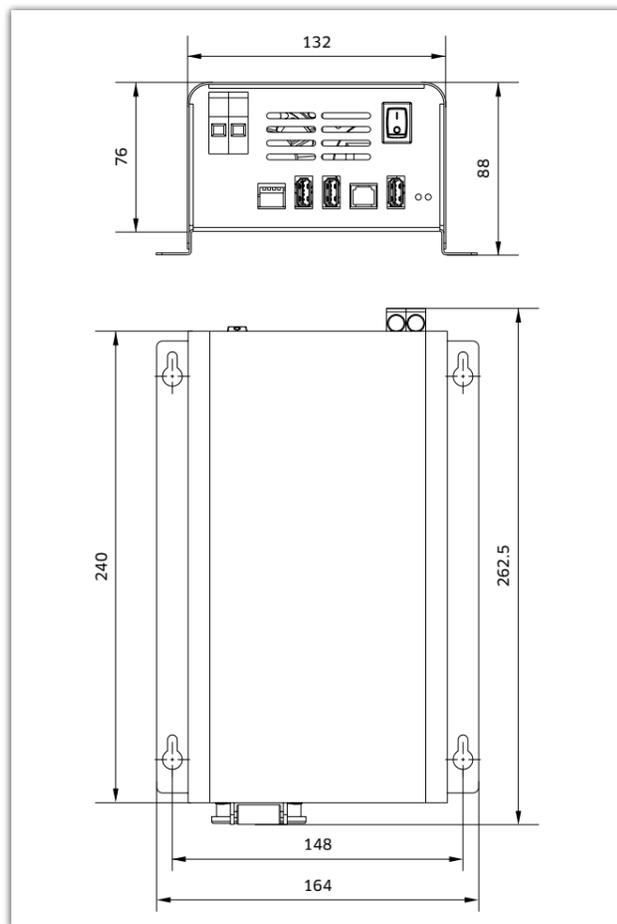


In the synchronic operation mode each DSW-2000-Synchron requires its own set of connection cables.

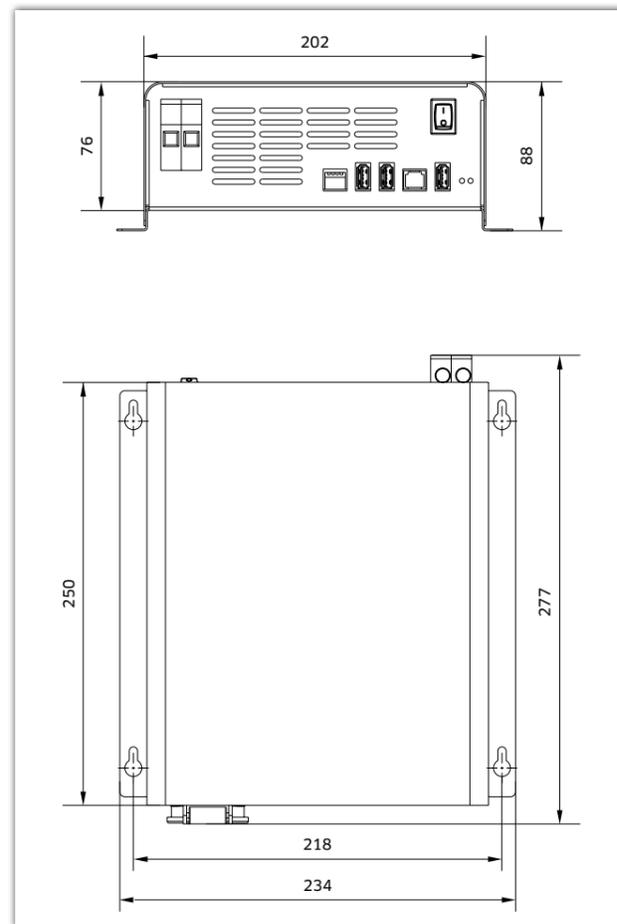
DIGITAL SINE WAVE INVERTER MODELS 12 V & 24 V / DIMENSIONS



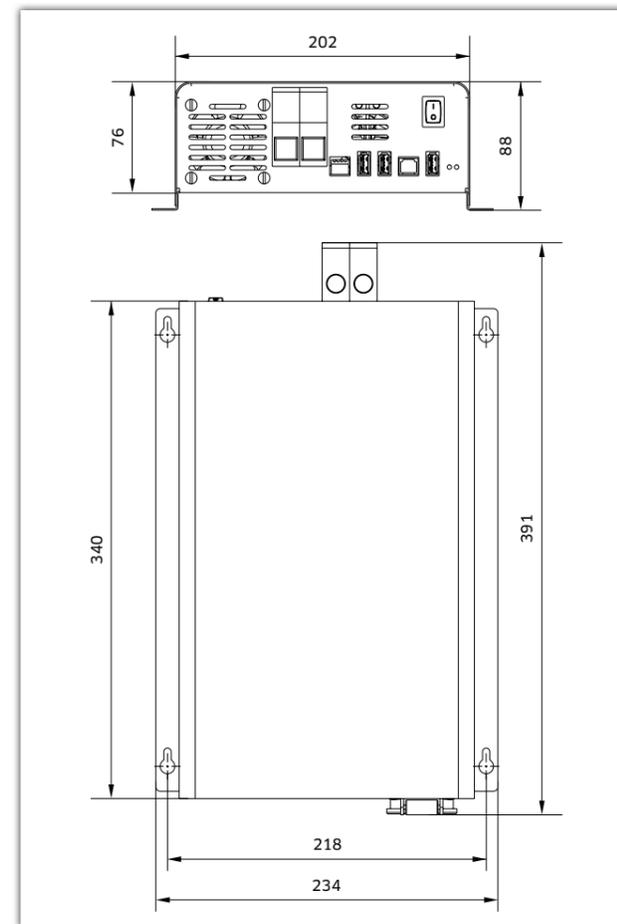
DSW-300



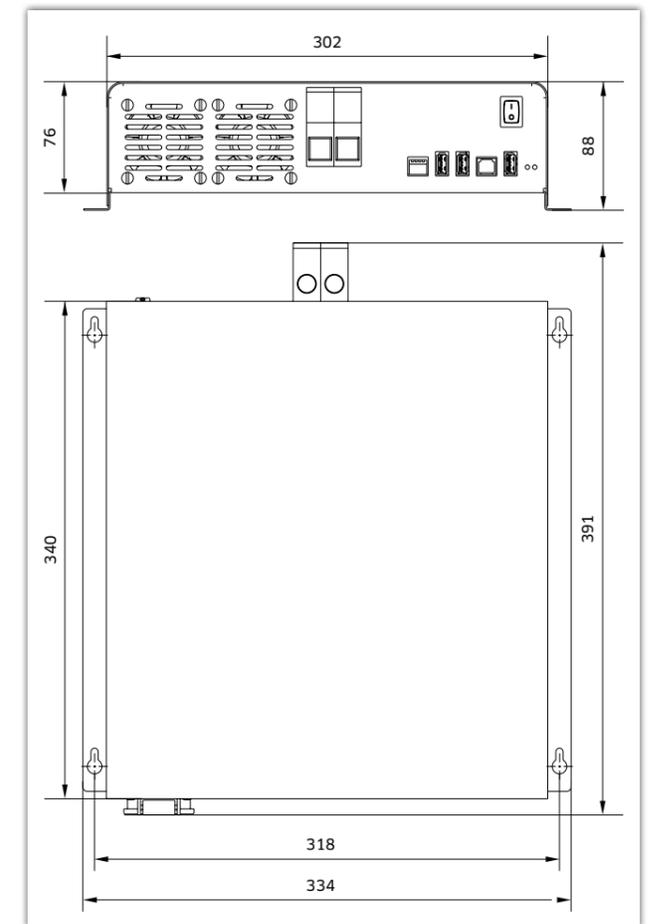
DSW-600



DSW-1200



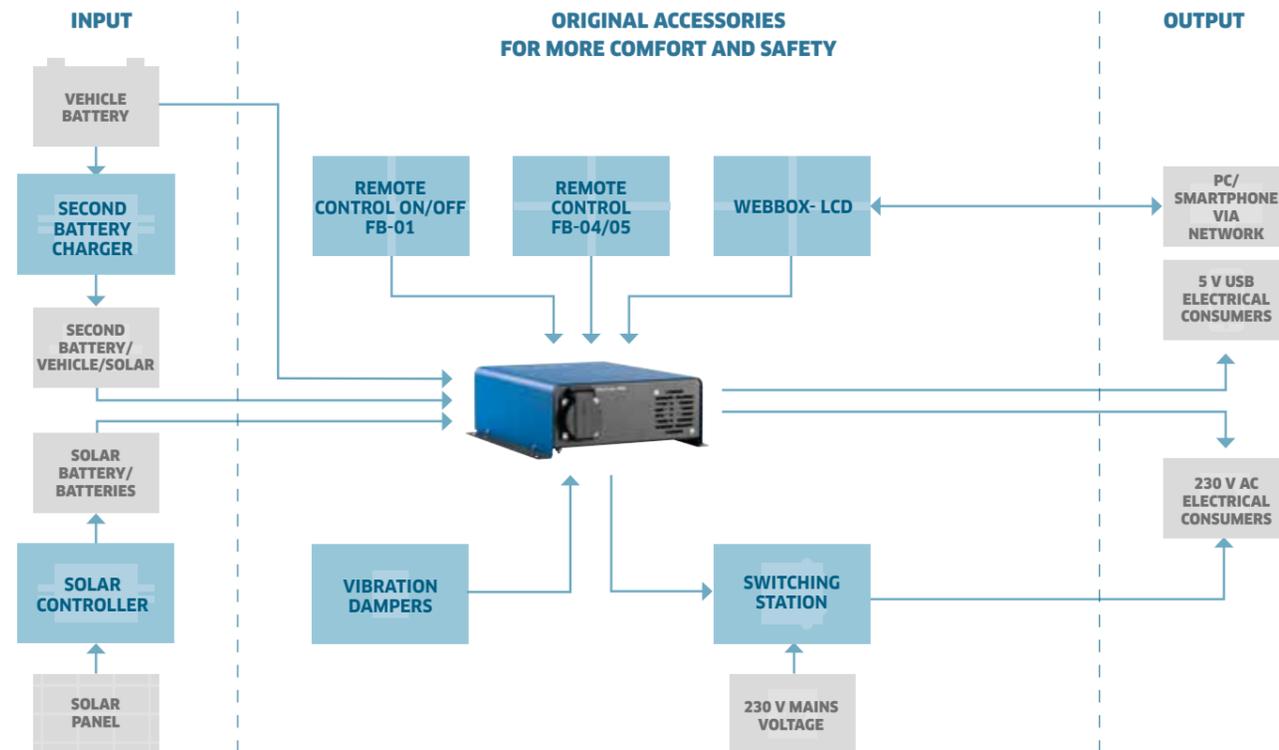
DSW-2000/DSW-2000-Synchron



ACCESSORIES/ BASICS

Our plus: the equipment.

With our original IVT accessories, you can adapt your inverter to your individualized requirements. You only pay for equipment you actually need. And as usual, you can rely on the typical IVT quality.



Connection cable set for DSW Inverters

IVT connection cables are safe and regarding the conductor's cross section and cable length exactly attuned to the respective inverter. The high quality workmanship of our connection cables assures a particularly long lifetime even at high encumbrance.

The cable set is already fitted with matching eyelet rings and cable end sleeves for a connection to the battery and to the inverter. The color-coded cable ends (red = connection to positive pol / black = connection to negative pol) support a quick and polarity-safe connection to battery and inverter. All original IVT connection cables are delivered including the fuse holder with a 200 A fuse.

Please note that each synchronized inverter requires its own set of connection cables.

Suitable connection cable	DSW-300	DSW-600	DSW-1200	DSW-2000	DSW-2000-Synchron	Order no.
1 m 16 mm ²	•	•	-	-	-	431000
2 m 16 mm ²	•	•	-	-	-	431001
3 m 16 mm ²	•	•	-	-	-	431009
1 m 25 mm ²	-	-	•	-	-	431002
2 m 25 mm ²	-	-	•	-	-	431003
1 m 35 mm ²	-	-	-	•	•	431004
2 m 35 mm ²	-	-	-	•	•	431005
3 m 35 mm ²	-	-	-	•	•	431006
1 m 50 mm ²	-	-	-	•	•	431010
2 m 50 mm ²	-	-	-	•	•	431011
3 m 50 mm ²	-	-	-	•	•	431008

Synchron Connection Cable for DSW-2000-Synchron

With this Synchron Connection Cable you can link 2 DSW-2000-Synchron Inverters in parallel. Therefore, the capacity of the system will be increased to 4000 W. The cable length is 1 m.

Order no. 431007



i In the synchronic operation mode each DSW-2000-Synchron requires its own set of connection cables.

i Important notice for 12 V inverters DSW-2000 and DSW-2000-Synchron:

Due to the high current on the battery side, please use only cables with a minimum cross section of 50 mm² for the DSW-2000 and DSW-2000-Synchron in the 12 V version.

Vibration damper set for DSW Inverters

The vibration dampers protect your inverter against shocks and vibrations. Generally, we recommend the use of vibration dampers for applications during extreme conditions of shock. An absorption grade of up to 77 % will be achieved, while the life span of your inverter will be significantly increased. Simply fasten the 4 vibration dampers by means of the 8 self-locking nuts and the 8 washers between the base and the inverter.

Technical data	Vibration damper set
Material	natural rubber, galvanized steel
Total height	5.5 cm
Rubber height	2.5 cm
Rubber width	2.0 cm
Thread	M6
Thread length	1.5 cm
Order no.	430117



ACCESSORIES/ SAFETY

Microprocessor controlled

Protected against over-load, short circuit and reverse feeding

Suitable for solar isle systems

Suitable for caravan, mobile home, boat, passenger car, and much more



For 12 V lead batteries up to 500 Ah

Suitable for solar isle systems



Switching Station US-12N

The Switching Station enables a failure-free supply of 230 V AC electrical consumers from 2 different voltage sources, for example from an inverter and the regular 230 V mains net. With the priority switching you can determine which voltage source is preferred – if this voltage source is cut off, the Switching Station will automatically switch to the substitute voltage source. This way, your device will keep running despite a power outage or low batteries.

The high quality relays assure a precise switching threshold. With this, your inverter is well protected against the reverse feeding from external voltage.

Technical data	Switching Station US-12N
Input voltage	230 V AC
Input current	max. 12 A
Power	max. 2700 VA
Switching time	1-2 seconds
Fuse	F 15 A / 250 V
Protection	overload, short circuit
Housing	plastic
Protection type	IP 55
Input	2 x screw terminals
Dimensions	120 x 120 x 58 mm
Weight	250 g
Art.-Nr.	400033

Second Battery Charger 12 V/80 A

If an inverter is used in a vehicle in order to protect the starter battery, it is useful to install a second battery as well as a second battery charger.

While driving, the starter battery will be charged primarily. When it is full, the second battery charger will automatically switch to charging the second battery. Therefore, both batteries will now be charged by the alternator. Up to a voltage of 12.8 V both batteries will remain connected in parallel. If the total voltage drops below 12.8 V, the second battery charger disconnects the additional battery again. Power can still be withdrawn from the second battery. It is important that electrical consumers are only connected to the second battery. Thus, a safe start of the vehicle is always possible. The electronic is suitable for all 12 V lead batteries. The switching capacity is sufficient for batteries up to 500 Ah. The second battery charger is admitted for a permanent installation in vehicles authorized for the use on public roads. It fulfills the legal requirements of the ECE regulation and is therefore E-mark certified.

Technical data	Second Battery Charger 12 V/80 A
Battery voltage	12 V DC (2x)
Max. switching current	80 A (max. 5 min.)
Normal load	60 A
Max. voltage	16 V DC
Operating voltage	0.6 V
Power consumption	5 mA
Operating current	300 m
Second charging begins at	13.6 V
Second charging shuts off at	12.8 V
LED-indicator on	second battery charging
Dimensions	125 x 62 x 50 mm
Weight	400 g
Order no.	900003

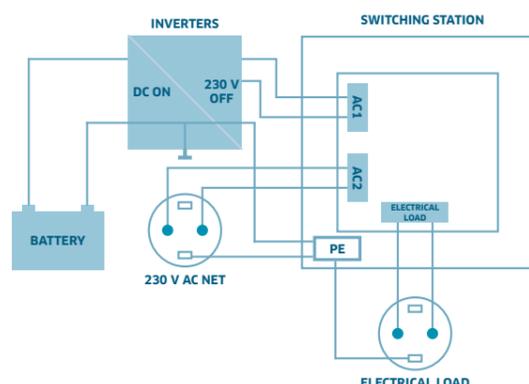
Moreover, it might be reasonable to consider the usage of a second battery charger within a solar isle system, when it consists of a battery system with 2 batteries or more. By a simple and inexpensive addition like the IVT Second Battery Charger, you can make sure that the energy supply of your most important electrical consumers, like your alarm system or your safety lights, is secured.



Mains priority switching:

The 230 V AC mains net is connected to the input AC2 (higher priority).

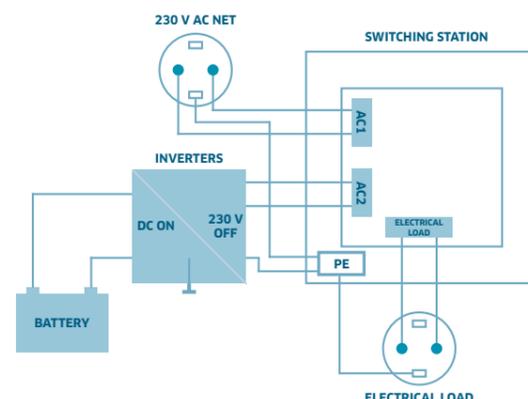
- This means the battery will be preserved while the inverter will be protected against reverse feeding
- Only when AC2 is voltage-free, the input AC1 switches on the power supply via battery and inverter.



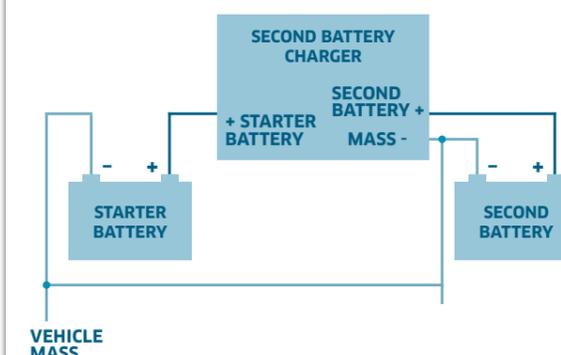
Inverter priority switching:

The inverter is connected to the input AC2 (higher priority).

- This means the power will primarily be gathered from the battery via the inverter (for example as part of a solar isle system).
- Only when the inverter shuts off due to the deep discharge protection, the 230 V AC mains net will be turned on by the input AC1.



Connection diagram of the Second Battery Charger in vehicles



ACCESSORIES/ COMFORT

Suitable for DSW Inverters | Suitable for MPPTplus+ Solar Controllers | Cable length 1.8 m



Suitable for DSW Inverters | Suitable for MPPTplus+ Solar Controllers | Range 15 m



Suitable for DSW Inverters | Cable length 4 m



Suitable for DSW Inverters | Function mode similar to IVT remote controls

Connection to network required

Cable length 1.8 m



Remote Control Touchscreen FB-04: cable-connected

The Remote Control FB-04 (cable) is compatible with all inverters of the DSW series as well as with the solar controllers of the MPPTplus+ series. Up to 4 devices may be individually controlled and monitored with this remote control. For this, the devices must only be interconnected via USB cable. A timer function has been integrated to automatically turn your device on/off. Up to 2 independent operation times can be programmed. The operation and surveillance of the most important parameters are being achieved by means of the LCD color touchscreen.

Remote Control: DSW Inverters

With the remote control, you can check the status of the connected battery on the input side and read the output parameters (output voltage, output current, output power) on the output side. Furthermore, it allows for the customized setting of the deep discharge protection while the load output can be turned on/off.

Remote Control: MPPTplus+ Solar Controller

You can adjust the cut-off voltage, the deep discharge protection and the temperature compensation as well as evaluate and monitor the solar power. The charging current can be limited which is particularly important when charging smaller batteries. The operation data can be stored on conventional SD/SDHC-cards and exported as a text file (*.txt).

The cable-connected Remote Control FB-04 will be charged via the USB cable included in the delivery content.

Remote Control Touchscreen FB-05: radio controlled version

The radio frequency Remote Control FB-05 allows for a location-independent control of your system with a 15 m radius. The USB radio stick included in the delivery content will be connected to the primary unit. The FB-05 will be supplied with power by means of an integrated Lithium-Ion rechargeable battery. It can be recharged using the power supply unit included in the delivery content.

FB-04



(Storage card is not included in the delivery content)

Delivery content:
Remote control FB-04,
USB cable

FB-05



(Storage card is not included in the delivery content)

Delivery content:
Remote control FB-05,
USB radio stick,
Power supply

Technical data	FB-04	FB-05
Operation voltage	10 V	3.7 V
Typ. internal current consumption, active	45 mA	120 mA
Typ. internal current consumption, standby	0 mA	0 mA
Range	-	15 m
Transfer frequency	-	868 MHz, bidirectional
Storage battery	CR1220	-
Battery type	-	Li-Ion 3.7 V/900 mAh
Charging adaptor	-	Power supply, 5 V/1 A
Connection cable	USB Type A	-
Storage card	SD/SDHC	SD/SDHC
Housing	plastic	plastic
Dimensions	105 x 65 x 20 mm	105 x 65 x 20 mm
Weight	95 g	115 g
Art.-Nr.	200051	200053

Remote Control FB-01

With this remote control, all inverter models of the DSW series can be turned on and off. The LED indicators correspond with the inverter's DC-input respectively AC-output and provide important information regarding the operational status of the inverter.

Technische Daten	FB-01
Operation voltage	10 - 32 V DC
Internal current consumption, active	200 mA
Housing	plastic
Connection cable	4 m
Dimensions	50 x 38 x 28 mm
Weight	60 g
Art.-Nr.	430111

No additional PC software is required to control the Webbox-LCD. The IP address is assigned automatically. The data is recorded on the internal memory.



Webbox-LCD

With the Webbox-LCD, Digital Sine Wave Inverters and MPPTplus+ Solar Controllers can be monitored and individually controlled via an existing computer network. For this, just connect the Webbox to the chosen network by means of a conventional LAN cable. The device assigns itself an IP address. Via the internet browser important operational parameters such as deep discharge protection, temperature compensation, cut-off voltage or maximum charging current can be adjusted and evaluated on the input and output side.

The daily recorded protocol data is stored on the internal memory and can be downloaded as *.txt file in order to be imported, for example into Microsoft Excel for a tabular evaluation. An access via smartphone or tablet is also possible, as long as a connection to the internet is given. The Webbox-LCD is delivered together with a 1.8 m USB cable and matching power supply.



Technical data	Webbox-LCD
Voltage supply	via USB device interface
Internal current consumption, active	50 mA
Interface data exchange	USB Type A
Interface network connection	RJ45
Internal storage battery	CR2032
Dimensions	115 x 80 x 33 mm
Weight	146 g
Order no.	200054

MANUFACTURER SERVICE/ ADDED VALUE FOR YOU AND YOUR CUSTOMERS

Here's to a fair partnership.

As manufacturer it is of great importance to us that you and your customers are always fully satisfied with our products. In addition to premium class products, we offer you a wide range of service and counselling measures as well as assist you with the distribution of our products upon request.

Our extensive offer includes the following services:



Employee training:

Only employees who are masters of their craft are able to develop the best solutions for their customers. Our training staff provides your employees in the sales and customer service department with the knowledge and the security for an optimum product recommendation and offers further tips regarding the professional installation of our devices.



3 years manufacturer warranty:

As we are fully convinced of the performance, technology and workmanship of our products. Therefore, we offer you a 3 year manufacturer warranty. Of course, this is also valid for products which have been built, modified and designed according to your wishes and requirements.



Individualized sales promotions:

Adapted to suit the advertising activities of your company, we gladly support you with advertisement material, displays for your sales room or other promotional measures.



Custom development:

Your customer have big plans? We gladly support you with the development of customized solutions for you and your customers. Contact us and take advantage of our long-standing experience.

We are available

Monday to Thursday from 08.00 - 17.30, Friday 8.00 - 15.30
under the following phone number:

+49 (0) 9622 71991-0



Repair service:

It goes without saying that our repair work is carried out quickly and carefully. Repaired devices will be returned to you within 7 work days. After the warranty period has expired, we will provide an estimate of the costs in advance.



Spare parts service:

If you wish to repair the device yourself, we deliver the required spare parts even years later. Please consider, though, that repair works may only be performed by authorized professional staff.



Personal advice:

You have further questions? Our qualified staff gladly provides assistance and advice regarding all questions about inverters, voltage converters, solar technology, charging technology as well as portable light. Contact us.

Phone: **+49 (0) 9622 71991-0**
E-mail: **support@ivt-hirschau.de**

HOW TO FIND YOUR INVERTER:

In order to determine which inverter model you need, simply add up the capacity (W or VA) of the used electrical consumers. At this, please consider that certain electrical consumers require a higher capacity reserve (5 to 10 fold) due to the higher inrush current.

recommended inverter	conventional electrical consumers	recommended battery capacity	conductor cross section	conductor length
DSW-300 (12 V oder 24 V)		≥ 45 Ah	≥ 16 mm ²	bis 3 m
DSW-600 (12 V oder 24 V)	 	≥ 75 Ah	≥ 16 mm ²	bis 3 m
DSW-1200 (12 V oder 24 V)	  	≥ 75 Ah	≥ 25 mm ² ≥ 35 mm ²	bis 2 m bis 3 m
DSW-2000 2000 W 12 V ¹⁾ 24 V	    	≥ 100 Ah	≥ 35 mm ² ≥ 50 mm ²	bis 2 m bis 3 m
DSW-2000-Synchron ²⁾ 4000 W (2 x 2000 W) 12 V ¹⁾ 24 V	    	≥ 200 Ah	2 x ≥ 35 mm ² 2 x ≥ 50 mm ²	bis 2 m bis 3 m



Multimedia devices/small electrical consumers (up to 300 W)
e.g.: mobile phone, laptop, TV set, radio, charging devices



Electrical equipment/tools (up to 500 W)
e.g.: jigsaw, electric whisk, hedge clippers, hand-held blender



Electrical equipment/tools (up to 1000 W)
e.g.: drill, angle grinder, coffee maker, espresso maker



Electrical equipment with increased inrush current
e.g.: pumps, compressors, refrigerators, air conditioning devices



Electrical equipment with high capacity
e.g.: hair dryer, vacuum cleaner, electrical heater, electrical lawn mower

¹⁾ Due to the high currents, only use conductors to the battery with a minimum cross section of 50 mm² for the DSW-2000 and DSW-2000-Synchron in the 12 V version.

²⁾ Should the DSW-2000 not be sufficient or if you require a higher capacity in the future, we recommend to use the DSW-2000-Synchron. This version can be interconnected to a second DSW-2000-Synchron device to achieve a continuous capacity of 4000 W.



Important:
Cross section of the conductor.

For safety reasons, we recommend to always use a sufficiently dimensioned original connection cable. The original IVT connection cables are exactly at-tuned to the respective inverter series and additionally fitted with a 200 A fuse.



Second battery:

To use a second battery is especially reasonable, when an inverter is used within a vehicle. If the second battery is discharged, the engine will still start reliably using the vehicle's starter battery.
Within a solar isle system, a second battery in conjunction with a second battery charger constitutes a simple and cost-effective possibility to save the energy produced at peak conditions and, thus, use the system in the most efficient way.

IVT'S PRODUCT RANGES/ MORE OF YOUR STRONG PARTNER

For over 20 years, IVT has been standing for sophisticated, robust and reliable products at a fair cost-benefit ratio. Aside from our extensive inverter range, we also create innovative products in the scope of:

SOLAR TECHNOLOGY

For many years, IVT has specialized in creating a versatile line of solar controllers. In our range you may find cost-effective shunt controllers, user-friendly serial solar controllers as well as the sophisticated MPPT and MPPTplus+ solar controllers of the newest generation.



CHARGING TECHNOLOGY

IVT offers a wide range of reliable, safe and intelligent battery chargers. Aside from the charging stations for NiCd and NiMH batteries, it includes plug-in chargers for occasional usage. Furthermore, the large spectrum of 12 V battery chargers with multi-step charging characteristics and different charging currents allows for a gentle charging process, which adapts optimally to the capacity of your battery. Various functions such as the regeneration mode, temperature compensated charging and optional water-resistant housing versions characterize among others IVT's battery chargers.



DC/DC VOLTAGE CONVERTERS

Compact design, high efficiency grade and low heat generation are the outstanding properties of IVT voltage converters. The user-friendly and safe DC/DC voltage converters are used wherever 24 V DC must be reduced to 12 V DC, for example in truck, bus, ship, mobile home or construction vehicle.



PORTABLE LIGHT

Our hand and work lamps have a long tradition. This is why IVT belongs to the leading manufacturers for portable light. Numerous product features unite in our lamps: day-bright light, different operation modes, halogen and/or LED technology, long lighting range, emergency light function, swiveling lamp head and much more. On top, they are light in weight, handy, rechargeable and protected against deep discharge.

As versatile as the products' advantages are the areas of application: for indoor and outdoor use, for camping and leisure, for workshops and craftsmanship, as emergency and safety lighting in buildings.



FOR FURTHER INFORMATION PLEASE VISIT OUR WEBSITE WWW.IVT-HIRSCHAU.DE