

IVD diagnostics in resource-limited settings

Reliable results under challenging conditions



Human

Diagnostics Worldwide

Access to an accurate and fast diagnosis

A challenge in resource-limited settings



A limited number of health centers

Many patients in rural areas travel long distances to health centers to receive diagnostics and therapy. It is therefore important to ensure that the results are accurate and promptly available to ensure adequate therapy.

Many essential diagnostic tests require an analyzer to be tested

To address the lack of access to tests and testing services in several countries, the WHO has published an Essential Diagnostic List (EDL). It contains a basket of recommended in vitro diagnostics that should be available at the point-of-care and in laboratories in all countries to ensure timely and life-saving diagnoses. Only a small proportion of the recommended tests can be performed manually, by dip stick or rapid test. Most tests, approximately 75%, require analyzers. This is essential especially for parameters where a sensitive diagnosis or reliable monitoring is critical. Examples include molecular tests for the diagnosis of tuberculosis or immunoassays for monitoring cancer treatments. Health posts and laboratories in emerging countries need reagents, equipment and analyzers adapted to the difficult conditions in order to perform the recommended tests.

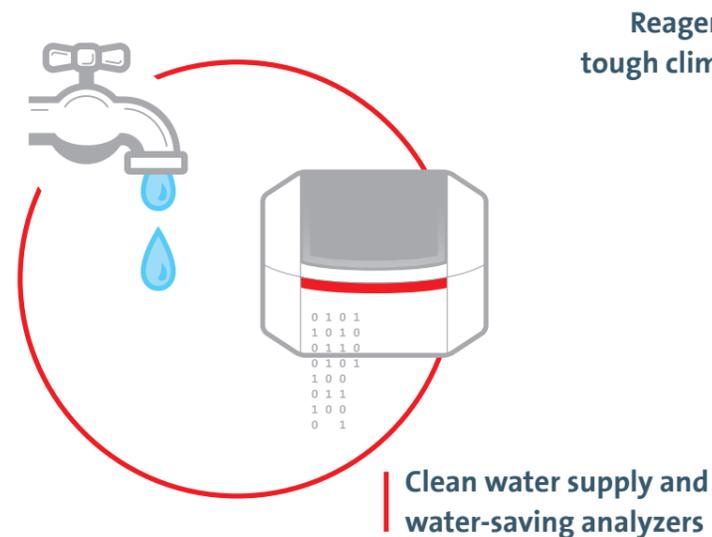
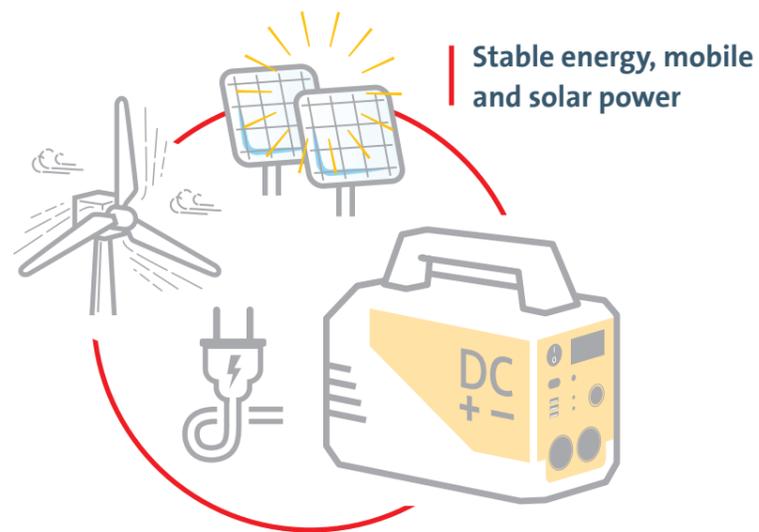


A stable power supply; clean, deionized water, and controlled testing climate - a limitation in many emerging countries

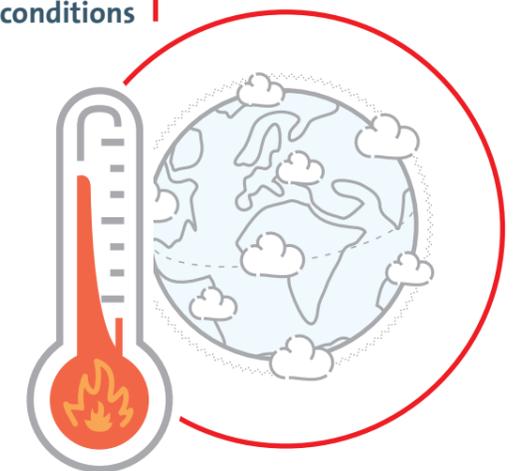
Any voltage or power supply instability poses a risk to IVD analyzers and electronic equipment in general. Interrupted analyses can mean lost patient samples and delayed results. Instrument operation can also be affected, for example, by clogged tubing. Clean water is in short supply in many countries and poor water quality can affect results and impact instrument functionality. Because small health posts typically do not have air-conditioning or refrigeration, proper reagent storage is another aspect making patient care more difficult. Reagents that require cooling or are sensitive to high temperatures are not suitable. Solutions made for tough environmental conditions are urgently needed.



HUMANS solutions are designed for resource limited settings



Reagents suitable for tough climate conditions



Mobile power solutions

A solar panel and battery system with variable charging options

HUMAN offers many analyzers and laboratory instruments that can run for more than 2 hours on battery power with our battery system. Some instruments can even be powered for a full working day off the grid with HUMAN's battery. If needed, the battery can also be charged continuously by a solar panel. No technician is required to install the panels.

! A car battery or diesel generator does not provide the stability or protection needed to operate sensitive IVD instruments.

Battery system with inlet and outlet electronics to protect and stabilize power

The Battery System is smarter, smaller and lighter than a car-battery. It is smarter, since it provides power inlets accepting voltage and frequency fluctuations and stable power outlets independent on environmental changes.

- > HUMAN analyzers and laboratory instruments run for more than 2 hours with our battery system
- > Protection against power outages and spikes



Charging

- > with 220 V (AC), main generator, windmill or water-power,
- > with 12-25 V (DC) with solar energy.

Input fluctuations caused by variable sunlight cause no problems - DC output remains stable

Constant output

- > The 220V (AC) outlet is unaffected by power outages / and fluctuating voltage and frequency
- > The DC outlet is suitable for a direct connection with small instruments*

* Efficiency is higher on the DC outlet as there is no conversion loss.

HUMAN's solar panels - the perfect match for our battery systems

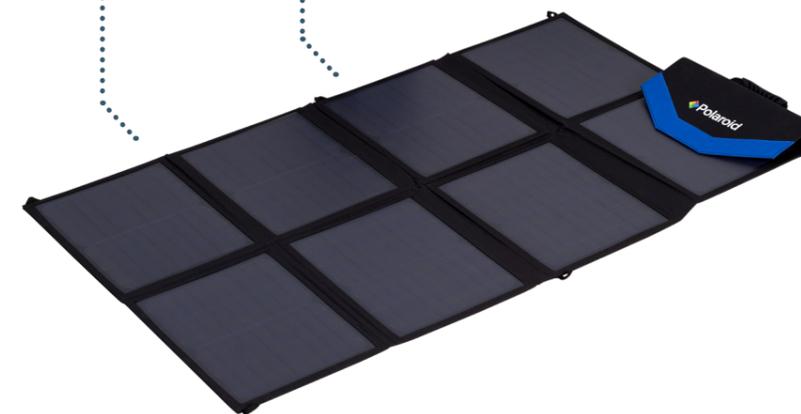
A solar panel paired with a battery system is the ideal stand-alone solution when grid or generator power is not available, as is often the case in resource-limited areas or for mobile testing. In both situations, analyzers with low power and water consumption and ready-to-use, heat-stable reagents are required. Two sizes of solar panels provide power for each of our battery types.

Solar panel 100 W

- > Ideal for charging of 786 Wh battery system

Solar panel 36 W

- > Ideal for charging of 73 Wh battery system



For example: With our 786 Wh battery system, you can run a HumaCount 80^{TS} and HumaSRate 24^{PT} together with a refrigerator (100W) for 3.6 hours to bridge a power outage. Combined with our 100W solar panel, up to 8 hours of operation are possible.



Solutions designed for resource-limited settings

Stable energy – wherever you need it

With 50 years of experience in supplying laboratories even in remote areas, our focus has been on the development of products that can be stored in extreme climates and are optimized for low water and energy consumption.

Solutions for IVD analyzers, covering any energy supply problems

Power instability is a problem whether the grid is unavailable for milliseconds or hours. A stable power supply at all times is the cornerstone of good laboratory service, reliable results and low maintenance.

Power down time tools	Seconds without power	Hours without power	No power
 Battery system and solar panel	 sec ✓	 hrs ✓	 off ✓
 Battery system	 sec ✓	 hrs ✓	
 UPS - uninterruptible power supply	 sec ✓		

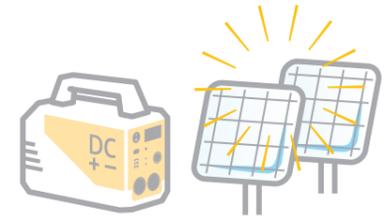
Protection of equipment by UPS and safety power socket

HUMAN provides an uninterruptible power supply (UPS) for each device and a safety power outlet for each device to protect against voltage spikes. In the event of a power failure, the UPS takes over and guarantees a constant voltage. Important! Our battery systems can also be used as a UPS. If our batteries are used, no UPS is needed.

! HUMAN offers two UPS types to provide a solution for each level of analyzer power demand.



Battery system and solar panel for all HUMAN devices – at least 2 hours battery operation



Clinical Chemistry	Hours
HumaLyzer 4000 / Primus	> 8
HumaStar 100 / 200 / 300SR*	> 4
HumaLyte Plus3/5	> 12



Clinical Chemistry	Hours
HumaReader HS / Single plus	> 12
Elisys Uno*	> 4
Elisys Duo	> 3
Combiwash	> 5

Urinalysis	Hours
CombiLyzer 13	> 8



Laboratory Line	Hours
HumaPure	> 1000
HuMax Micro / HumaRock / HumaRoll	> 48
HumaTherm	> 8
HumaCube / HumaTwist	> 6
HuMax 3K	> 5
HuMax 4K / 5K / HCT	> 2



Hematology	Hours
HemaCount 5D ^{CRP} / HemaCount 5D	> 5
HemaCount 5L	> 3
HemaCount 80 ^{TS} / 30 ^{TS}	> 12
HemaSRate 24 ^{PT}	> 12



Hemostasis	Hours
HumaClot Junior	> 48
HumaClot Duo plus / Quattro	> 8
HumaClot Pro	> 4

Microscopes	Hours
HumaScope Light / Classic / Advanced	> 1000

Diabetes DX	Hours
HumaMeter A1c	> 24
HumaNex A1c Variant	> 4

Autoimmune DX	Hours
HumaBlot 44 ^{FA}	> 5



Molecular DX	Hours
HumaLoop T / M	> 4
HumaTurb C+A	> 24
HumaHeat	< 4

* Analyzer without PC

Clean water - an essential resource

Water-saving and purification solutions



Low-water-consumption technology with HUMAN analyzers

In R&D we focused on low energy and water consumption to meet the requirements for operation in resource-limited settings. Our clinical chemistry systems are equipped with ProClean2.0 Technology. Although we wash the reaction-cuvettes to avoid waste, our analyzers consumes 50% less water than most other manufacturers. Another achievement is the reduction of the amount of highly contaminated waste by 85% - a great contribution to the protection of our environment.



	HumaStar 300 SR	HumaStar 200	HumaStar 100
Throughput samples (up to)	300	200	100
Water consumption/h	< 3l	< 2l	< 1l
Average water consumption / sample	< 10 ml	8 ml	8 ml



Ensure a supply of clean water with the HumaPure water purifier

Clean water is the key to reliable results. Analyzers that pipette reagents use water for cleaning and rinsing in order to avoid cross-contamination. Water that is not pure, however, can cause problems. Calcium in cleaning water, for example, causes problems when testing calcium concentration or with calcium-sensitive tests. Water pipes made of iron or lead may leach these metals into the water, causing similar problems. The worst problem is particles, which can cause clogs.

The HumaPure ion-exchanger solves these problems by producing pure, filtered water suitable for IVD testing.

Reliable results are a challenge under tough climate conditions

Robust reagents, ready to use and easily stored



Ready to use reagents and wash solutions

We avoid the use of concentrated reagents and solutions where possible, since the lab would need pure water for dilution

Temperature stable reagents

Especially our hematology reagents a wide storage temperature range--from 2 - 42° C, combined with a shelf life of 36 months. With these reagents, you don't have to worry about transportation and storage.

Freeze-dried reagents instead of a cold-chain for easy storage and transportation

In the field of molecular diagnostics, we offer freeze-dried solutions that eliminate the need to ship with dry ice or have a freezer in the laboratory as is normally required for molecular testing. Highly sensitive molecular diagnostics, e.g. for the detection of tuberculosis, can thus be performed in remote laboratories.



Voices of our customers



Karu Diagnostic Center - Nigeria

Mr. Francis Nka works in the laboratory with HumaLoop T, powered by our battery system, charged directly from the solar panel just outside the window.

„TB LAMP is equipped with a solar panel and a powerful lithium battery, which mitigates the problem of power supply. Its result accuracy cannot be overestimated“



Lopei Health Center III - Uganda

Mr. Turyasim Aderia, works in the laboratory with HumaLoop T, powered by our battery system, charged directly from the solar panel just outside the window.

„Testing patients for tuberculosis with a molecular method? This was previously unimaginable in our Health Center due to a lack of air conditioning and power supply. TB-LAMP now offers us this possibility with its solar panel and battery solution“



Amin General Hospital - Ethiopia

Mr. Sulayman Mohammed. Happy with our HumaStar 200 sourced via HUMAN UPS.

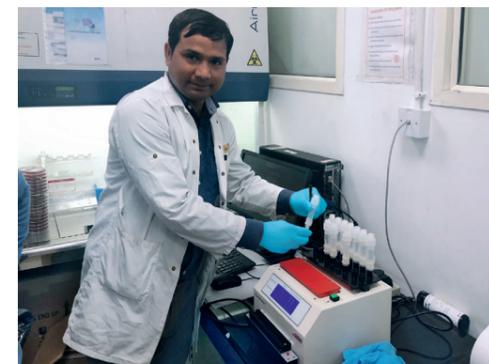
„High up-times of analyzes and stable results by HumaStar 200, since operated via HUMAN UPS system“



St. Gabriel General Hospital - Ethiopia

Mr. Biniyam Tesfaye. Satisfied quality manager and user of HumaStar 200 and UPS system.

„ The low water consumption of HumaStar 200 helps us to better deal with limited resources“



Dr. Lal PathLabs, Delhi - India

Mr. Anupam Kumar. User of HumaLoop T, for tuberculosis testing.

„The high sensitivity, high throughput and the reliability of the assay, even under the challenging climate conditions, have convinced us.“



University of Damaturu Teaching Hospital, Yobe State - Nigeria

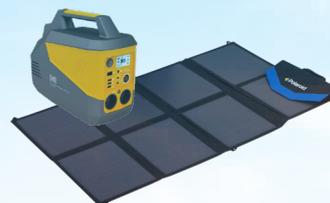
Mr. Musa Liman. Satisfied HumaCount 80^{TS} user.

„My concern is always to provide reliable patient results, which is why I like to the consistently high quality of the reagents, which are stable for up to 36 month and which guarantee the recall of the target values of the control at all times.“



IVD solutions for resource limited settings

Reliable results under challenging conditions



Product and ordering information

Product	Description	REF
Portable Battery System 786Wh	Lithium ion battery, 786 Wh, with DC-AC converter and battery charger by mains	18965/220
Solar Panel 100W	Recharge of 786 Wh battery about 8 hours, flexible 8 panels 100W	18965/100
Portable Battery System 73Wh	Lithium ion battery, 73 Wh, battery charger by mains. Ideal for Humalyser 4000 and HumaClot DuoPlus/ Quattro	18250/74
Solar Panel 36W	Recharge of 73 Wh battery about 2 hours, flexible 6 panels 36W	18250/73
UPS 1000W	UPS, line-interactive with sinusoidal output voltage and buck-boost function	18961
UPS 3000W	UPS, line-interactive with sinusoidal output voltage and buck-boost function	18964
HumaPure	Water-purification device, Waterquality 0-30 μ S/cm, 65l/h	15140

Your local distribution partner

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