

extra capacity

extra service life

Data Sheet

BACS ATEX C20ex3/C30ex3/C40ex3

Zone 1 / 2

Zone 21 / 22

Certified according to ATEX and IECEx

Protection Type: ATEX

II 2G EX db IIC T5 Gb
 II 2D EX tb IIIC T100°C Db

ATEX Certificate Number: 18ATEX0119X

Protection Type IECEx

EX db IIC T5 Gb

IECEx Certificate Number: DEK 18.00.75



ATEX / IECex certified BACS® for EX Environment Zone 1/21 and 2/22

BACS is the most successful and powerful system for stationary battery systems, all connected devices for power supply and sensor technology in battery and UPS rooms.

BACS® is the safest battery management system on the market, able additionally to monitor and manage the surrounding infrastructure. BACS® starts with measurement results from the direct environment of a battery such as voltage, impedance, temperature, humidity, acid level, hydrogen gas concentration, pressure, etc. BACS® can additionally take control of external hardware such as complex climate control systems and emergency venting, if required. Even sensors and contacts to and from third-party systems can be reliably managed by BACS®, allowing it to integrate with fire alarm systems, for example. BACS also interfaces with all types of UPSs, inverters, transfer switches, generators, and other equipment powered by batteries. What's more, BACS® can transparently integrate into all kinds of network structures such as BACnet, SNMP or MODBUS and optionally also into other fieldbuses and adapt to existing safety guidelines.

BACS maintains an assured and competent overview even in a complex emergency situation.

Similar to a programmable logic controller (PLC), BACS® (and the CS141) can be programmed to manage automatic emergency procedures. Core functions here include management of third-party devices (other UPS SNMP cards or other sensors), active on-site emergency management, and a comprehensive emergency notification system that provides all necessary information immediately when needed so that crisis response teams can react as quickly as possible.

BACS delivers improved economics and safety and is not a "luxury" like battery monitoring systems - this is largely due to "balancing":

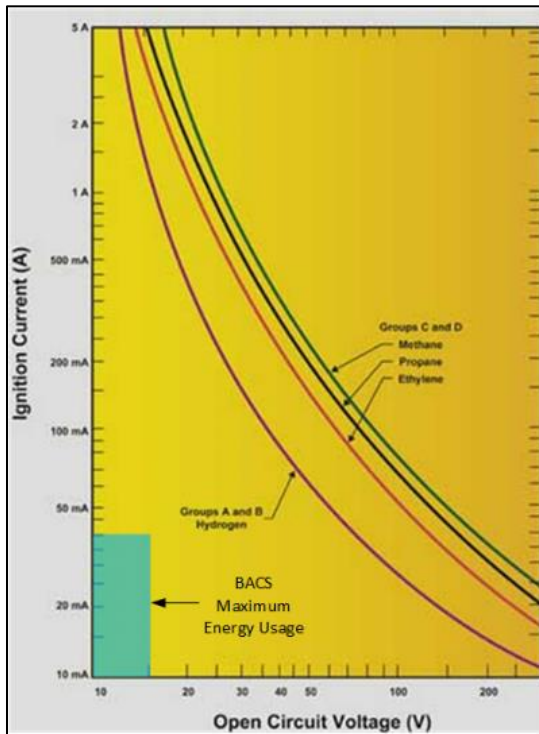
To optimize charging behavior, BACS® relies on our self-developed passive control method - known as "Equalizing" in Europe and "Balancing" worldwide. This allows the charging voltage of all batteries to be kept within the optimal values specified by the battery manufacturer. **This control has a massive influence on the behavior of the batteries and thus on the cost and reliability of the entire system.**

The lifetime of all batteries is the costly part of any battery based UPS solution: If one battery fails, then usually **all** batteries have to be replaced. The lifetime of such a battery network in a UPS is 50-60% of the stated design life of battery manufacturers. This unacceptably short lifetime can be improved enormously by Equalizing/Balancing. With this technique, each individual battery is kept at the optimal voltage level to avoid overcharging or undercharging. The main reason for premature failure of batteries in stationary systems is thus eliminated. That this has an additional improvement in the capacity of a battery system is a welcome side effect, and verifiable: capacity measurements of end customers have shown that systems using BACS have up to 20% higher capacity compared to comparative systems without BACS batteries. The reason for this is simply explained: batteries that are not undercharged reach 100% capacity and now provide this increased power during a capacity test.

BACS® has been proven to extend the service life of all batteries in high voltage string applications, so that the specified Design Life can actually be achieved. This is something that no Battery Monitoring System can do. A monitoring system can only display data, and has no economic effect and is therefore a pure "luxury" that increases the actual costs - without any positive effect on safety or improvement in costs.

BACS® can be integrated into any network, and independently collects all operationally relevant values with regards to voltage, temperature, internal resistance, etc.. In addition, BACS® can actively control the individual charging behavior for each battery or even each cell within a battery string of UPS storage systems and **determine the capacity**. Where other systems have to cumulate laboriously and round up or down or estimate, BACS can use a better calculation basis because of balancing and thus achieve equivalent capacity measurements without costly additional measurement technology. BACS is the ideal system for all types of lead/NiCd acid batteries (open / wet cells, maintenance free, gel, AGM etc.) and also for most types of Li-ion batteries.

ATEX / Intrinsic safety during regular operation



Due to very high safety regulations, the oil and gas industry insists on special protective measures against flying sparks or overheating as soon as IT-related systems have to be operated within the danger zone of potentially highly explosive gases. Since some of these systems must not fail in an emergency, UPS solutions for emergency power supply are often used for protection purposes.

A battery management system in the EX area (explosion-proof area) should therefore - just like the UPS - be able to prove certification according to ATEX in order to be allowed to operate in such environments. **However, such an ATEX certificate is not attainable as soon as a battery is used - because a battery as a hydrogen source may not be used in the EX area at all, since it can generate a spark or even an arc in the event of a short circuit.** I.e. although a battery sensor may be ATEX tested, the validity expires as soon as the sensor is applied to a battery which itself cannot be ATEX safe. This absurdity is not clear to many users and they insist on a certificate for the battery sensors although this actually expires automatically as soon as it is used on batteries.

For this reason, we solve the problem with a different approach: We call our BACS sensor "Intrinsically Safe" - because the potential for the generation of a spark that can

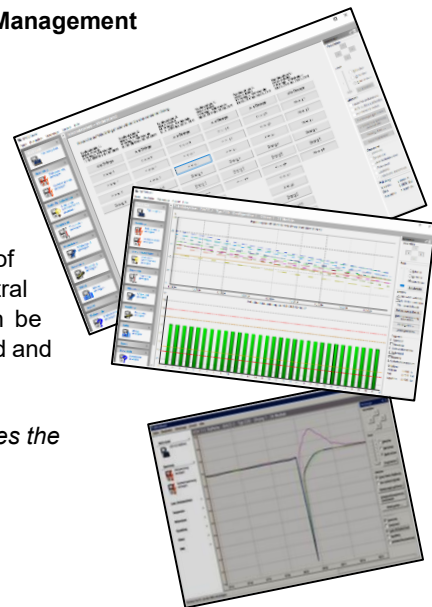
cause gas to ignite cannot be applied to our system. The drawing above left shows the currents and voltages allowed for the respective gas group where an explosion can occur. All units below the respective curve are considered "Intrinsically Safe". BACS is well below this critical range and it is therefore not possible in normal operation to generate an ignition spark which could lead to an explosion.

The BACSViewer – A Complimentary Tool for Professional Battery Management

The unique BACS® VIEWER software can do more than simply "fetch" data from the Manager and free local memory for data logging.

The BACS® VIEWER software is a powerful program to analyze and archive battery data of a BACS system. It integrates additional documents such as drawings, reports, warranty certificates, maintenance schedules, handouts for technical staff and facilitates the management of many BACS systems and thus thousands of batteries with one central software. With the BACS® VIEWER software, maintenance tasks can be scheduled, battery trends can be determined, faulty batteries are detected and status reports are generated automatically.

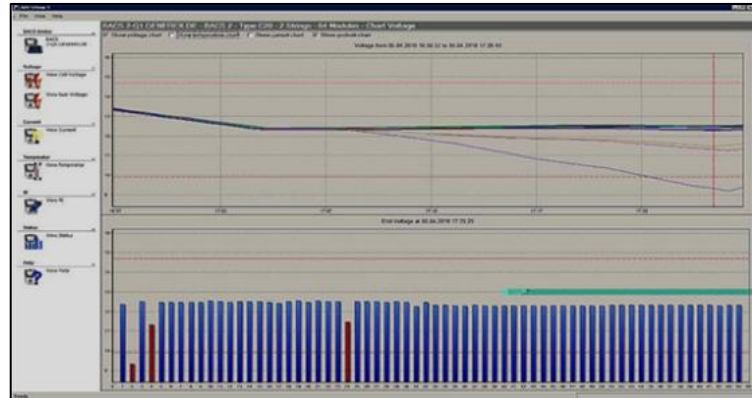
Battery chemistry irregularities are harbingers of a problem - BACS makes the "battery" gray area a thing of the past for system-critical applications!



Example: Detecting a defective battery

The BACS® VIEWER shows the individual battery voltage of all accumulators at the end of a discharge.

The red dotted line shows the voltages when power has returned. The lower bar graph indicates those accumulators which have collapsed early and have been discharged to a very low level. These batteries are a risk to the entire system.



With this important information, it is possible to plan a targeted replacement of damaged batteries – without such detailed information as provided by BACS® all batteries will have had to be replaced, which means a long down time and enormous extra costs associated with otherwise unnecessary replacement units.

Aufbau des ATEX BACS Gehäuse

Structure of the ATEX BACS housing

The ATEX BACS housing differs from the classic BACS installation. The main differences are an external temperature sensor integrated in the BACS measuring cable, fuses integrated in the housing and 3 modules per housing.

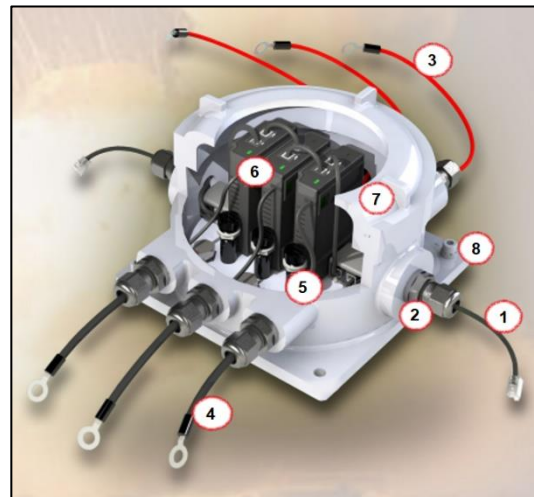
1.Connection cable BACS bus. These connection cables are used for BACS bus communication with the neighboring BACS ATEX module (or with the BACS WEBMANAGER / SPLITTINGBOX which is usually outside the hazardous area). The bus cables are either assembled on site to the desired length by the installer, or can be ordered pre-assembled in different lengths. The cables must be routed through the screw terminal (2) by the installer and sealed by tightening the screw.

2.Screw terminal with seal: After inserting the BACS bus cable, tighten the screw terminal - the integrated seal will wrap around the cable and thus seal it gas-tight.

3.Cable to battery positive pole (RED) : This connects the first of the 3 positive battery poles. The other remaining red measuring cables are connected to the 2nd and 3rd battery at the positive pole. The red cables are individually adaptable and can be shortened to the desired length by the installer and fitted with new cable lugs.

4.Cable connector negative pole (black): This is used to connect the first of the 3 negative battery poles. The other remaining black measuring cables are connected to the negative pole of the 2nd and 3rd battery. These cables are slightly thicker than the red positive cables because a temperature sensor has been incorporated into the cable lug.

5.BACS module fuse: The 2 fuses associated with each BACS module are located on the main circuit board and can be replaced if necessary.





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6. BACS module : Each C20ex3xxxx can hold up to 3 BACS modules. Each BACS module is connected to a BACS bus cable (as a ribbon cable) and the 1st and 3rd module is connected to the next BACS ATEX housing (or to the BACS WEBMANAGER or SPLITTINGBOX outside the hazardous area) via the BACS bus cable and the screw terminal.

Each BACS module has the identification number ID 0 on delivery - this still has to be configured. Please read the BACS addressing guide in this manual which explains the addressing procedure.

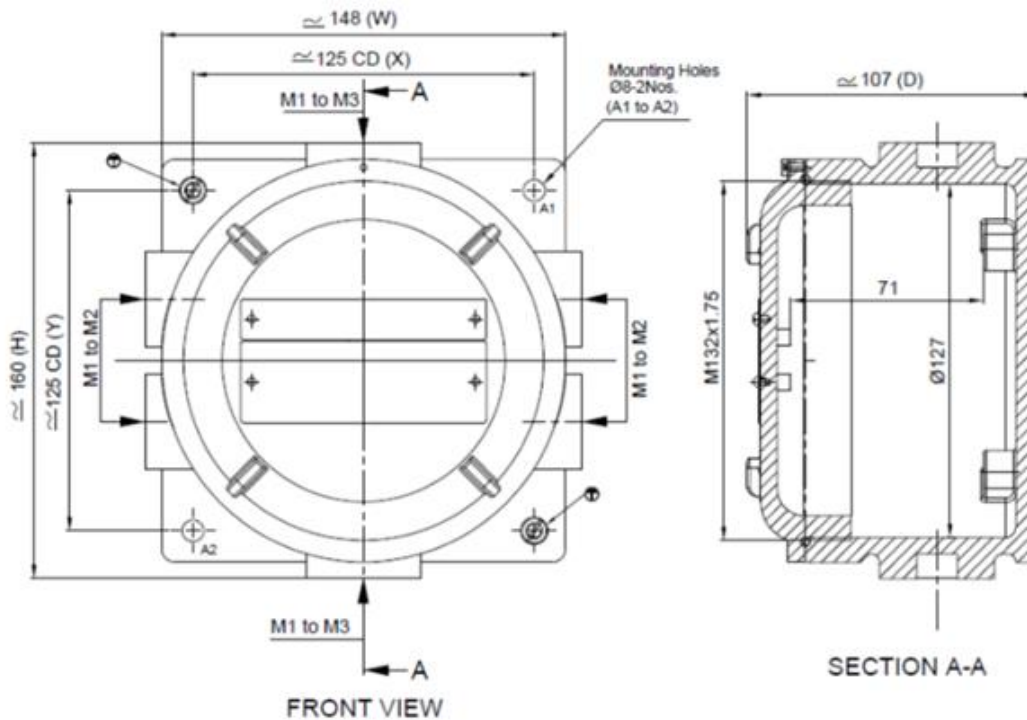
7. Screw cover with viewing window: Once the addressing and wiring has been completed, the screw cover can be closed and the locking screw tightened. The housing is then ready for use within ATEX zones 1 and 2 and can be put into operation.

8. Mounting holes for stationary attachment and grounding: The BACS module can be attached to the battery rack, wall or other location and grounded using these 4 mounting holes.

The ATEX housing:

Be sure to observe the regulations and drawings for ATEX zones 1/2 and 21/22. The housing must not be installed in zone 0 or 20. Ensure sufficient distance to the corresponding danger zone.

Housing: TBE 160TW



Weight: 3,9 kg

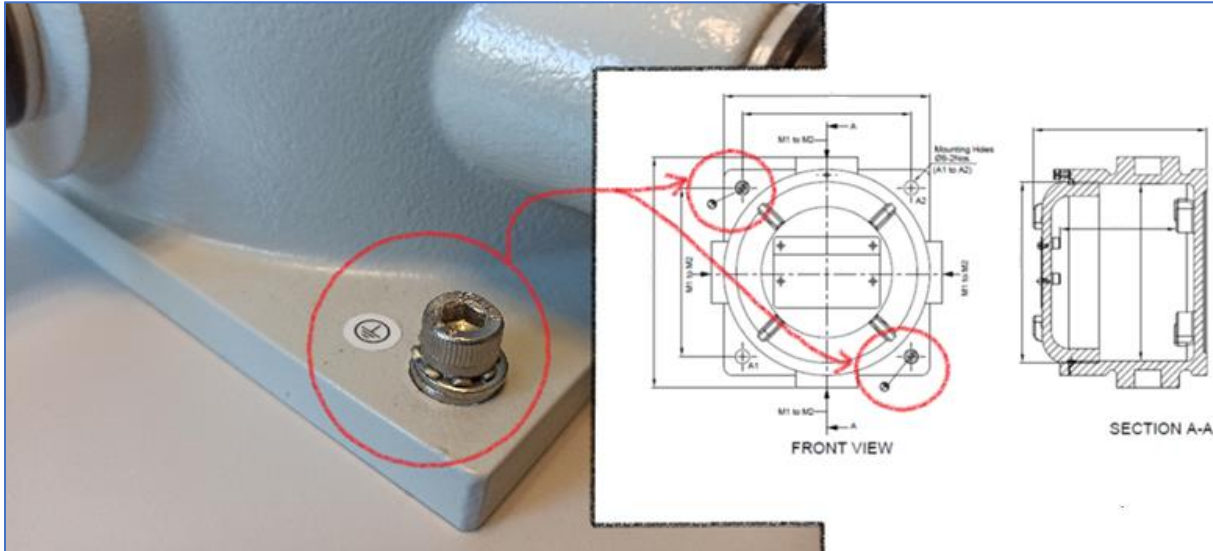
Dimension: 300mm * 300mm * 140mm

 ROSE Systemtechnik GmbH D-32457 Porta Westfalica	Ex db IIC T5 Gb -20°C ≤ Ta ≤ +55°C
	Type: TBE 160TW 41 W IP66
	DD.MM.YY 000000000
	DEKRA 18ATEX0119X IECEx DEK 18.0075S WARNING - DO NOT OPEN WHEN ENERGIZED

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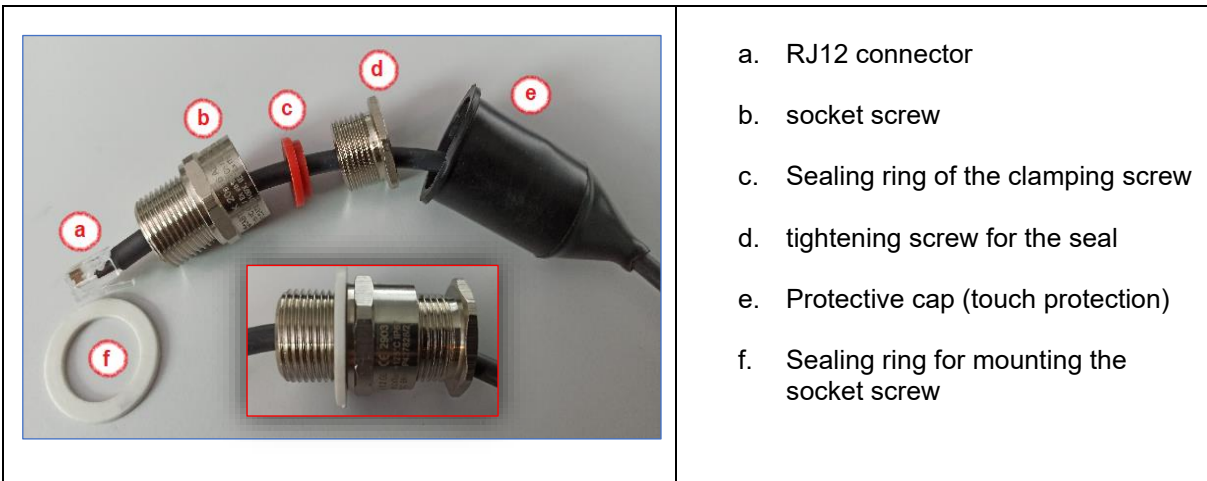
Multiple grounding ports

Easily accessible ground points allow extensive grounding to effectively prevent electrostatic discharge.



Sealing gem ATEX / EX-i

All wired inputs and outputs are sealed according to EX-I and ATEX requirements.





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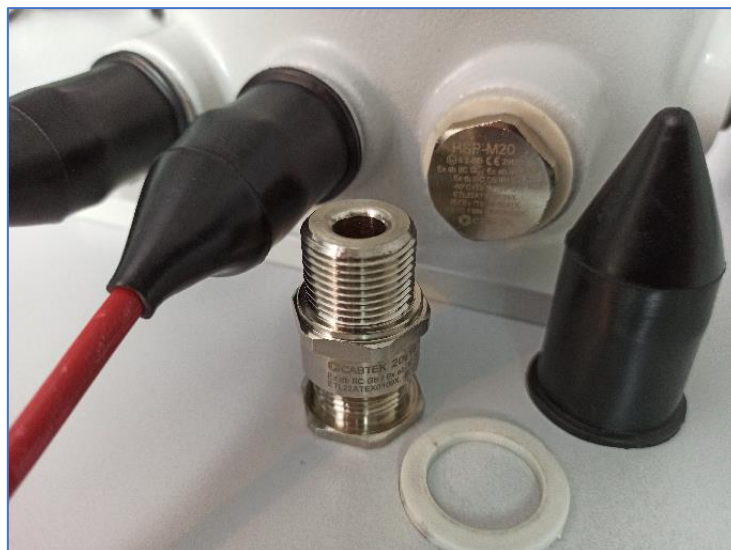
Factory pre-assembled cables

Pre-assembled cables have the advantage that the seals are already installed. These cables can be installed directly on the housing. The BACS bus cables for the connection between two housings have a pre-installed seal on both cable ends in front of the connector.



Blind plugs

According to the ATEX specification, the blind plug are included to seal open ends.





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Technical data

General technical data: CS141 / BACS HW161 Webmanager Product family








CS141 PRODUCT SERIES GENERAL OPERATING DATA	
Processor and memory	ARM Cortex A8 800MHz CPU, 8GB storage for battery history.
Operating condition	Temperature 0 - 60°C, max. humidity 0 - 90%, non-condensing
MTBF (calculated)	849192 hours; 96,9 years
corresponds to RAL 7035Power consumption	At 12V default power supply consumption approx. 150mA. Note: At BACS a CONVERTER is included.
MTBF (calculated)	849192 hours; 96,9 years
maximierenDisplay	2x LED (Manager status, UPS/device alarm)
External BACS kit CS141 housing	ABS, corresponds to RAL 7035 (light grey) CE, UL 94/NEMKO certified flame retardant
SLOT BACS kit CS141 housing	Slot card "SC format" for UPS devices witch compatible slots UL- Certification
BACS Webmanager Budget housing	Aluminum, RAL 7035 (light gray) UL/NEMKO certificated – or – ABS 94/NEMKO certified flame retardant with integrated DIN Rail
Number of possible BACS modules	The Standard Power supply (2000 mA) grants power for up to 360 BACS C modules. For up to 512 modules and sensors, ask for larger power supply.
Operation altitude range	0m – 4000m
Operating maintenance	Removal of dust and dirt in regular terms is required, beside this, the BACS WEBMANAGER, measuring cables and the BACS modules do not need any maintenance work. There is no internal battery used that need maintenance or replacement.
BACS GENERAL STORAGE DATA	
Temperature range	-55°C – 70°C
Humidity range	0% -90% in non condensing environments
Storage altitude range	0m – 4000m
Particular additional information	Open storage in heavily sooty or dusky storage conditions or environments with sediment deposits can have a negative effect. Acidic or similar aggressive atmospheric environmental conditions may also affect long-term storage
Storage Maintenance	The BACS WEBMANAGER, measuring cables and the BACS modules do not need any maintenance work during storage. There is no internal battery used that need maintenance or replacement



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BACS kit product bundle differences to general data:

 <p>CL N US 60950</p> <p>CE UK CA</p>	<p>BACS® WEBMANAGER BUDGET SC (slot version) Order No. BACSKIT_BSC4</p> <p>Interfaces</p> <p>3x RS-232 interfaces, (COM1= UPS/power device, COM2 =Multipurpose, COM3=BACS battery bus) 1x RJ12 for battery bus converter 1x RJ45, 10/100Mbit Ethernet</p>
 <p>CL N US 60950</p> <p>CE UK CA</p>	<p>BACS® WEBMANAGER BUDGET SC MINI (Mini Slot Version) Order No. BACSKIT_BSC4</p> <p>Interfaces</p> <p>1x RJ12 Multiport for accessories and battery bus converter 1x Spitting Port cable for simultaneous use</p> <p>1x RJ45, 10/100/ 1000Mbit Ethernet</p>
 <p>CL N US 60950</p> <p>CE UK CA</p>	<p>BACS® WEBMANAGER BUDGET L Order No. BACSKIT_LB4</p> <p>Interfaces</p> <p>3x RS-232 interfaces, (COM1= UPS/power device, COM2 =Multipurpose, COM3=BACS battery bus) 1x RJ12 for battery bus converter 1x RJ45, 10/100/ 1000Mbit Ethernet</p>
 <p>CL N US 60950</p> <p>CE UK CA</p>	<p>BACS® WEBMANAGER BUDGET SCM RS485 (slot version) Order No. BACSKIT_SCMB4</p> <p>Interfaces</p> <p>2x RS-232 interfaces, (COM1= UPS/power device, COM3=BACS battery bus), 1 * RS485 = COM2 1x RJ12 for battery bus converter 1x RJ45, 10/100/ 1000Mbit Ethernet</p>
 <p>CL N US 60950</p> <p>CE UK CA</p>	<p>BACS® WEBMANAGER BUDGET LM RS485 Order No. BACSKIT_LMB4</p> <p>Interfaces</p> <p>2x RS-232 interfaces, (COM1= UPS/power device, COM3=BACS battery bus), 1x RS485 1x RJ12 for battery bus converter 1x RJ45, 10/100/ 1000Mbit Ethernet</p>



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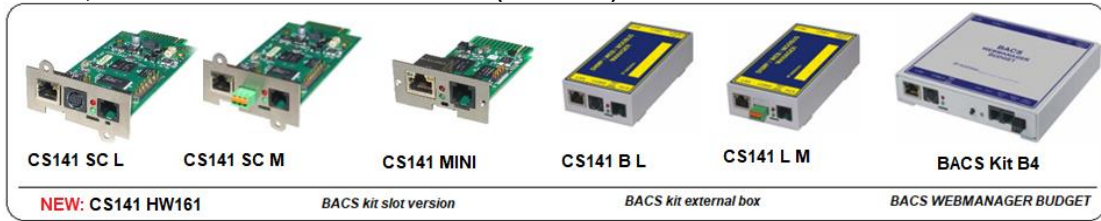
BACS WEBMANAGER BUDGET differences to general data:

	<p>BACS® WEBMANAGER BUDGET - 12V Order No. BACSKIT_B4</p>	
	<p>Interfaces</p>	<p>3x RS-232 interfaces, (COM1= UPS/power device, COM2 =Multipurpose, service port for Windows BACS READER and PROGRAMMER software) USB 2x battery bus converter outputs internal 1x RJ45, 10/100Mbit Ethernet 1x potential-free contact (2 pole screw wire size 1,0 mm², rated load 24 VDC /1A</p>
<p>Dimension Weight</p>	<p>Dimension Weight</p>	<p>130 x125 x 30mm = 5,12 x 4,92 x 1,18 in. (W x L x H) Aluminium 360g / ABS housing 238g</p>
	<p>BACS® WEBMANAGER BUDGET - 18V-72V Order No. BACSKIT_B4</p>	
 	<p>Interfaces</p>	<p>3x RS-232 interfaces, (COM1= UPS/power device, COM2 =Multipurpose, service port for Windows BACS READER and PROGRAMMER software) USB 2x battery bus converter outputs internal 1x RJ45, 10/100Mbit Ethernet 1x potential-free contact (2 pole screw wire size 1,0 mm², rated load 24 VDC /1A</p> <p>Technical data: TRACOPOWER TCL 024-112DC</p> <p>18V – 72V DC 12V 2000mA DC stabilized up to 390 BACS Modules Input safeguarding fuse (recommended circuit breaker 6-16A / characteristic C) is not included.</p>
<p>Dimension Weight</p>	<p>Dimension Weight</p>	<p>130 x125 x 30mm = 5,12 x 4,92 x 1,18 in. (W x L x H) Aluminium 360g / ABS housing 238g</p>
	<p>BACS® WEBMANAGER BUDGET - 90V-375V Order No. BACSKIT_B4_375</p>	
 	<p>Interfaces</p>	<p>3x RS-232 interfaces, (COM1= UPS/power device, COM2 =Multipurpose, service port for Windows BACS READER and PROGRAMMER software) USB 2x battery bus converter outputs internal 1x RJ45, 10/100Mbit Ethernet 1x potential-free contact (2 pole screw wire size 1,0 mm², rated load 24 VDC /1A</p> <p>130 x125 x 30mm = 5,12 x 4,92 x 1,18 in. (W x L x H) Aluminium 360g / ABS housing 238g The power supply provides 1960mA are for up to 392 BACS C modules and other BACS components.</p> <p>Technical data: TRACOPOWER TPCL 030-112DC</p> <p>90 – 375V VDC or 85 - 264VAC 12V 2200mA DC stabilized up to 390 BACS Modules Input safeguarding fuse (recommended circuit breaker 6-16A / characteristic C) is not included.</p>
<p>Dimension Weight Number of modules</p>	<p>Dimension Weight Number of modules</p>	<p>130 x125 x 30mm = 5,12 x 4,92 x 1,18 in. (W x L x H) Aluminium 360g / ABS housing 238g</p>
<p>Input Output Notes</p>	<p>Input Output Notes</p>	<p>90 – 375V VDC or 85 - 264VAC 12V 2200mA DC stabilized up to 390 BACS Modules Input safeguarding fuse (recommended circuit breaker 6-16A / characteristic C) is not included.</p>



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In 2022, also available: The BACS Kit "LC" (Low Cost)




- **Special Design for smaller systems with up to 6 KVA**
 - o Prepare your UPS / SOLAR system for the next generation battery management
 - o Simply Start managing your batteries how it ever should be done
 - o No hidden "pay-per use" for new functions.
- **Benefit from all BACS features for up to 24 batteries**
 - o Use all professional BACS features
 - o Benefit from the advanced technical support
 - o Use all professional modules available for BACS
- **Scalable by design:**
 - o No new basic hardware required
 - o Use the upgrade capabilities to expand your system as needed
 - o Just enter a serial key unlock the full UPS list

As "LC" available products:

Order No	Product is identical to	Limitation overview
BACS WEBMANAGER B4LC	BACSKIT B4	<ul style="list-style-type: none"> - Up to 24 batteries - Up to 6 KVA Ups
BACS WEBMANAGER CS141 BSC4LC	BACSKIT_BSC4	
BACS WEBMANAGER CS141 BL4LC	BACSKIT_BL4	
BACS WEBMANAGER CS141SCMB4LC	BACSKIT_SCMB4	
BACS WEBMANAGER CS141SCMB4LC with RS485	BACSKIT_SCMB4 / RS485	
BACS WEBMANAGER CS141LMB4LC with RS485	BACSKIT_LMB4 / RS485	
LICENCE Upgrades		
BACSCSLCUPG	<i>License: Converts all LC Editions into a fully qualified BACS system</i>	<ul style="list-style-type: none"> - Unlocks all limitations - Software License key

BACS All-In-One - Solution:





 SITEMANAGER 6 Order No. SITEMAN_6	
Processor and memory	ARM Cortex A8 800MHz CPU, 30 MB storage for battery history Non-volatile memory for alarm notification after power loss
Power consumption	40 watts max.
Interface	RS-485 interface for other devices / Adapter for RS232 support
Inputs	8 digital inputs (opened / closed configurable) 8 analog inputs (0 - 10V, 4 - 20mA, 0 - 20mA configurable via jumpers) 2 x RJ10 for BACS battery bus
Outputs	8 relay outputs (changer, max. 230V/ 4A AC/DC)
Network	10/ 100/ 1000Mbit LAN



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Supported protocols	Email, HTTP/HTTPs, SNMP, SNTP, MODBUS Over IP, BACnet, UPSTCP, DHCP, DNS, sFTP
Front Display	LED alarm display, LED operating status display
Dimensions	483 x 162 x 44mm, (483 x 212 x 44mm incl. SM_LOOM) 19,00 x 6,38 x 1,73in, (19,02 x 8,35 x 1,73in incl. SM_LOOM)
Weight	2262 g
Operating condition	Temperature 0 - 70°C, max. humidity 20 - 95%, not condensing
Network management	UNMS II Network Management software
Network Adapter	Optional PROFIBUS, LONBUS adapter
Additional sensors	Smoke/fire alarms, motion detectors, door contacts etc., connection of any other alarm contact indicator, which output signal is between 0 - 10V,4 -20mA or rather 0 - 20mA (configurable via jumpers)
Actuators	flash light, alarm buzzer, relay-switches, external switches, etc.

BACS Accessories

		<p>BACS® BUS CONVERTER 5 Order No. BACS_BUS_CONV_V</p>	
	Construction	Conversion and galvanic separation of the BACS battery bus to the BACS WEBMANAGER BUDGET plus real time clock (RTC) timer for the BACS WEBMANAGER.	
	Power Supply	Stabilized external 12V/2000mA	
	Number of modules	Standard Power supply grants power for up to 360 BACS C modules. For up to 512 Modules and sensors, a larger power supply is available.	
	Interface	2x RJ10 for BACS battery bus 1xRJ12 for COM3 BACS WEBMANGER BUDGET 1xMiniDin8/RS232 interface for serial connection to workstation. 1x2,1mm DC connector socket for power supply via external power supply 1x potential-free contact (2 pole screw terminals for 1,0 mm ² /24 VDC /1A)	
	Display	Optical display (LED)	
	Alarm	Internal alarm buzzer with acknowledge button	
	Housing	Polystyrene	
	Optional parts	Optional: Adapter from mini-8 to RS232 for the BACS Reader, with junction cable mini-8 1.5m	
	Dimension	91,5 x 67 x 25 (W x H x D)	
Weight	120g		
		<p>BACS® SPLITTING BOX Order No. BCII_SPLITT</p>	
	Construction	Passive splitter for BACS communication cables, designed to optimize the overall cable lengths and to create an optical pleasant wiring. In addition to the extension of the 2 BACS bus inputs of the BACS CONVERTER.	
	Power supply	Passive element, no additional power supply required	
	Interfaces	5* RJ10 for BACS bus cables 1x RJ10 input connector for BACS bus data input	
	Housing	Polystyrene	
	Dimension	91,5 x 67 x 25 (B x H x T)	
Weight	90g		
<p>BACS® DC current sensor 50/200/400/1000/2000 Ampere</p>			



ATEX / IECex certified BACS® for EX Environment Zone 1/21 and 2/22



		<p>BACS® bus interface GX_R_AUX Order No. GX_R_AUX</p>	
		<p>Description</p>	<p>Input alarms and Output relay management. A typical application is the control of a battery breaker in case of "thermal runaway" alarm in the battery system. Applies to US Norm International Fire Code IFC 608.3 for isolating UPS batteries in case of a thermal runaway. In case of a high battery temperature and increasing voltages during float charge, the GX_R_AUX may open the battery breaker to stop a further increase of the temperatures in the batteries. Individual programming of the relays through web interface.</p>
		<p>Inputs</p>	<p>4 digital inputs (configurable NO/NC)</p>
		<p>Outputs</p>	<p>4 Relay potential-free outputs (NO/NC) / 50VAC – 2A, 30VDC – 1A</p>
		<p>Power supply</p>	<p>Powered by BACS bus, no external power supply</p>
		<p>Power consumption</p>	<p>170mA</p>
		<p>Housing</p>	<p>Polyamide, pluggable system DIN rail</p>
		<p>Dimension</p>	<p>75 x 75 x 45mm = 2,95 x 2,95 x 1,77 in. (LxWxH)</p>
		<p>Weight</p>	<p>170g</p>
		<p>BACS® CSH Current Sensor Ord. No: BACS_CSH50, BACS_CSH200, BACS_CSH400, BACS_CSH1000, BACS_CSH2000</p>	
		<p>Construction</p>	<p>DC current sensor for measuring battery string discharge and charging process +/-50A, +/-200A, +/-400A, +/-1000A, +/-2000A DC Current transducer diameter hole: 21mm [0,82in] (BACS_CSH50) /40 mm [1.57in]</p>
		<p>Power supply</p>	<p>Intern powered by BACS bus</p>
		<p>Power consumption</p>	<p>60mA</p>
		<p>Interfaces</p>	<p>2x RJ10 for BACS bus cable, pluggable system</p>
		<p>Housing</p>	<p>DIN Rail</p>
		<p>Dimension (LxWxH)</p>	<p>110 x 82 x 125 mm = 4,33 x 3,22 x 4,92 in. (LxWxH)</p>
		<p>Weight</p>	<p>420g</p>



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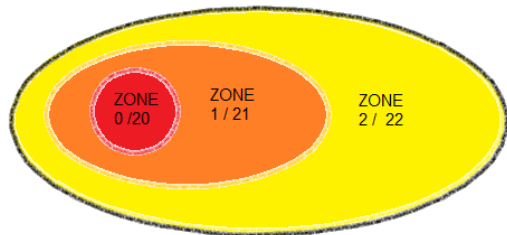
Modules and cables

General BACS module data


		BACS® modules Generation 3
	Construction	Measuring modules with passive balancing/equalization BACS is a registered and protected trade mark
	current consumption from battery	normal operation: 15 - 20mA (C20, C23, C30) 35 - 40mA (C40, C41) "Sleep Mode": < 1mA
	Measuring precision	Internal resistance: < 10 % at C40, < 5% at C20/30 Voltage: < 0,5 % Temperature: < 15 %
	Interfaces	2x RJ10 for BACS battery bus Internal RS232 bus interface 1x button for the addressing Temperature sensor -35 bis + 85 °C Optical display LED (alarms red/green, mode red/green)
	Housing	ABS housing (UL certified, flame retardant, cooling fins)
	Dimensions, weight	55 x 80 x 24 mm = 2,17 x 3,15 x 0,94 in. (B x H x T), 45g
	Operating condition	Temperature 0 - 60°C, max. humidity 90%, not condensing
	Int. protection rating	IP 42 coated against dust and condensate
	High voltages security tested	Protection against high ohmic batteries fault voltages up to 150 Volt /per module (fuse opens). At higher voltages the fuse opens, but BACS module is damaged. All REV 3.1 modules are designed for fault voltages up to 1000 Volt
	MTBF (calculated)	87.600 hours (10 years)


Available BACS Housings for Zone 1/ 2 and 21/22


ATEX-certified housing containing: 3 BACS C Modules for various voltages and 6 fuses inside the EX-housing. Including 6 * ATEX Halogen-free BC4/5 measuring cables, each 1.5m in length and in various ring terminal options. Including 3 * integrated temperature sensors mounted within in the negative leads.



Definition of ATEX Zones

- 

An area in which an explosive atmosphere is present continuously or for long periods of time, consisting of a mixture of air and flammable substances in the form of dust particles, gas, vapor, or mist.
- 



An area in which it is entirely possible that an explosive atmosphere consisting of a mixture of air and flammable substances in the form of dust particles, gas, vapor, or mist could arise for a short time due to production-related reasons during normal operation - for example, when filling and emptying a system.
- 

An area in which it is not expected that an explosive atmosphere consisting of a mixture of air and flammable substances in the form of dust particles, gas, vapor, or mist will occur during normal operation, and if it does, it will only be rare and short-lived.



ATEX / IECEx certified BACS® for EX Environment Zone 1/21 and 2/22

General Housing Data

		TBE 160 TW BACS housing for ATEX Environment	
	Name	TBE 160 TW	
	IECEx & ATEX Zone	Zone 1 / 2 Gas and 21/22 Dust	
	IP Protection Class	IP 66	
	Material	Aluminium, lacquered	
	Cert. According ATEX	18ATEX0119X	
	Cert. According IECEx	DEL 18.0075S	
	Dimensions	300 x 300 x 140mm	
	Operating Temperature	0°-50°C max	
Weight	3.9 KG		

Modules C20

	Atex Zone 1,2/21,22 Housing with M5 Terminal	
	Zone 1, 21:	Order No. C20ex3_Z1_M5
	Zone 2, 22:	Order No. C20ex3_Z2_M5
	Atex Zone 1,2/21,22 Housing with M6 Terminal	
	Zone 1, 21:	Order No. C20ex3_Z1_M6
Zone 2, 22:	Order No. C20ex3_Z2_M6	
Atex Zone 1,2/21,22 Housing with M8 Terminal		
Zone 1, 21:	Order No. C20ex3_Z1_M8	
Zone 2, 22:	Order No. C20ex3_Z2_M8	
Atex Zone 1,2/21,22 Housing with M10 Terminal		
Zone 1, 21:	Order No. C20ex3_Z1_M10Z1	
Zone 2, 22:	Order No. C20ex3_Z2_M10Z1	
Atex Zone 1/21 Housing with M12 Terminal		
Zone 1, 21:	Order No. C20ex3_Z1_M12	
Zone 2, 22:	Order No. C20ex3_Z2_M12	

Modules C30

	Atex Zone 1,2/21,22Housing with M5 Terminal	
	Zone 1, Z21:	Order No. C30ex3_Z1_M5
	Zone 2, Z22:	Order No. C30ex3_Z2_M5
	Atex Zone 1,2/21,22 Housing with M6 Terminal	
	Zone 1, Z21	Order No. C30ex3_Z1_M6
Zone 2, Z22	Order No. C30ex3_Z2_M6	
Atex Zone 1,2/21,22 Housing with M8 Terminal		
Zone 1, Z21	Order No. C30ex3_Z1_M8	
Zone 2, Z22	Order No. C30ex3_Z2_M8	
Atex Zone 1,2/21,22Housing with M10 Terminal		
Zone 1, Z21	Order No. C30ex3_Z1_M10	
Zone 2, Z22	Order No. C30ex3_Z2_M10	
Atex Zone 1,2/21,22Housing with M12 Terminal		
Zone 1, Z21	Order No. C30ex3_Z1_M12	
Zone 2, Z22	Order No. C30ex3_Z2_M12	

Modules C40

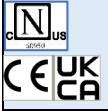





	Atex Zone 1,2/21,22Housing with M5 Terminal	
	Z1, Z21	Order No. C40ex3_Z1_M5
	Z2, Z22	Order No. C40ex3_Z2_M5
	Atex Zone 1,2/21,22 Housing with M6 Terminal	
	Zone 1, Z21	Order No. C40ex3_Z1_M6
Zone 2, Z22	Order No. C40ex3_Z2_M6	
Atex Zone 1,2/21,22 Housing with M8 Terminal		
Zone 1, Z21	Order No. C40ex3_Z1_M8	
Zone 2, Z22	Order No. C40ex3_Z2_M8	
Atex Zone 1,2/21,22Housing with M10 Terminal		
Zone 1, Z21	Order No. C40ex3_Z1_M10	
Zone 2, Z22	Order No. C40ex3_Z2_M10	
Atex Zone 1,2/21,22Housing with M12 Terminal		
Zone 1, Z21	Order No. C40ex3_Z1_M12	
Zone 2, Z22	Order No. C40ex3_Z2_M12	



ATEX / IECex certified BACS® for EX Environment Zone 1/21 and 2/22



BACS Atex Spare PartsX

These modules are available as spare parts for a BACS ATEX housing.

		<p>Module BACS® C20 Order No. BACSC20 REV 3 module for 12Volt 7-600Ah lead, NiCad, NiMH, Lithium batteries (UL certified)</p>
<p>Voltage range 9.7V – 17V RI range 0.5-60mOhm Equalization power 0.15 A</p>		
		<p>Module BACS® C30 Order No. BACSC30 REV 3 module for 6Volt 7-900Ah lead, NiCad, NiMH, Lithium batteries</p>
<p>Measuring value 4.8V – 8.0V RI range 0.5-60mOhm Equalization power 0.3 A</p>		
		<p>Module BACS® C40 Order No. BACSC40 REV 3 module for 2Volt 7-9000Ah lead, NiCad, NiMH, Lithium batteries (UL certified)</p>
<p>Measuring value 1.2V – 3.2V RI range 0.02-6mOhm Equalization power 0.9 A (at 2.27V)</p>		

BACS Cables

Communication cable to connect ATEX housings with the BACS WEBMANAGER





	<p>BACS® bus cables Order No. B4BCRJx</p>	
	<p>Description Cable coating Contacts Cable length</p>	<p>High quality communication BACS bus communication cable halogen free in accordance with VDE0281 part 14 twisted pair RJ10 Various lengths available. See latest BACS price list for details</p>





ATEX / IECEx certified BACS® for EX Environment Zone 1/21 and 2/22

BACS® CONTROL CABINETS: Technical data and dimensions

Control cabinet for BACS® systems. Plug-play, with AC input plug (Euro) ready to install. With optical and audible display on the outside door, protection class IP 54 with application of included bottom plate. Note that the cabinet is not ATEX certified.

	<p>BACS® CONTROL CABINET Type 1 Order No. BACS_CC1</p>																												
	<table border="0"> <tr><td>Controller</td><td>1</td></tr> <tr><td>Power</td><td>1</td></tr> <tr><td>LAN</td><td>1</td></tr> <tr><td>Contacts</td><td>1</td></tr> <tr><td>Front door</td><td>1</td></tr> <tr><td>Front door</td><td>1</td></tr> <tr><td>Spare parts</td><td>6</td></tr> <tr><td>Dimension</td><td>WHD</td></tr> <tr><td>weight</td><td>kg</td></tr> </table>	Controller	1	Power	1	LAN	1	Contacts	1	Front door	1	Front door	1	Spare parts	6	Dimension	WHD	weight	kg	<table border="0"> <tr><td>BACS WEBMANAGER BUDGET</td></tr> <tr><td>12V Power supply (100 – 240V, 50/60Hz)</td></tr> <tr><td>CAT 6 Ethernet socket</td></tr> <tr><td>Alarm contact (potential-free), 230VC / 30VDC / 8A</td></tr> <tr><td>POWER LED</td></tr> <tr><td>BACS ALARM LED</td></tr> <tr><td>Spare bus communication cable</td></tr> <tr><td>400 x 500 x 210 mm = 15,75 x 19,69 x 8,27 in.</td></tr> <tr><td>16,10</td></tr> </table>	BACS WEBMANAGER BUDGET	12V Power supply (100 – 240V, 50/60Hz)	CAT 6 Ethernet socket	Alarm contact (potential-free), 230VC / 30VDC / 8A	POWER LED	BACS ALARM LED	Spare bus communication cable	400 x 500 x 210 mm = 15,75 x 19,69 x 8,27 in.	16,10
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BACS Plus Size BACS Control Cabinets are also available as:

<p>BACS® CONTROL CABINET Type 4 Order No. BACS_CC4</p>	<p>BACS® CONTROL CABINET Type 5 Order No. BACS_CC5</p>	<p>BACS® CONTROL CABINET Type 6 Order No. BACS_CC6</p>
<p>- 4 * BACS WEBMANAGER BUDGET</p>	<p>- 5 * BACS WEBMANAGER BUDGET</p>	<p>- 6 * BACS WEBMANAGER BUDGET</p>
<p>- 4 * 12V Power 100 – 240V, 50/60Hz</p>	<p>- 5 * 12V Power 100 – 240V, 50/60Hz</p>	<p>- 6 * 12V Power 100 – 240V, 50/60Hz</p>
<p>- 4 * CAT 6 Ethernet socket</p>	<p>- 5 * CAT 6 Ethernet socket</p>	<p>- 6 * CAT 6 Ethernet socket</p>



ATEX / IECex certified BACS® for EX Environment Zone 1/21 and 2/22

- 4 * Alarm contact (potential-free) 230VC, 30VDC, 8A	- 5 * Alarm contact (potential-free) 230VC, 30VDC, 8A	- 6 * Alarm contact (potential-free) 230VC, 30VDC, 8A
- 4 * POWER LED, - 4 * BACS ALARM LED	- 5 * POWER LED, - 5 * BACS ALARM LED	- 6 * POWER LED, - 6 * BACS ALARM LED
12 * spare bus communication cable	14 * spare bus communication cable	16 * spare bus communication cable
- Dimension: 600 x 760 x 210 mm 23,62 x 29,92 x 8,27 in, weight: 38,10 kg	- Dimension: 760 x 760 x 210 mm 29,92 x 29,92 x 8,27 in weight: 48,50 kg	- Dimension: 760 x 760 x 210 mm 29,92 x 29,92 x 8,27 in weight: 55,40 kg

		<p>BACS® CONTROL CABINET with PC All Cabinets are also available with a fully featured Touch Panel Computer</p>
	RAM	1*204-pin SODIMM DDR3L 1333MHz / up to 8GB
	CPU	Intel Bay Trail J1900 Quad Core 2GHz
	Touch Panel	15" XGA TFT multi-point capacitive touch screen
	USB	4* USB Ports and 1 covered USB Service Port
	COM	6 COMPorts
	LAN	2 GLAN P
	Wireless	1 x Mini-PCIe slot, extensible 3G,Wifi wireless card
	Power Consumption (max)	38,6 Watt max
	Input voltage	DC 12V, support reverse polarity protection
	Graphic Software	VGA/HDMI Windows 10 Professional English Language BACS Tools Software packet pre-installed
Operating Condition	-30 ~80°C (-22~176°F)	
Relative humidity	5~95% (Non condensation)	
EMC	CD/FCC Class A	
Notes:	The Operating system is a fully featured Windows 10 operating system and needs additional configuration work. not pre-configured – you need to configure it before first use.	

Also available: BACS Control Cabinet with a full featured Windows Touch Panel All-In-One (AIO) - Computer For

How to order your BAC CC with Touch Panel PC:	
1 BACS WEBMANAGER + PC	BACS_CC1_TP
2 BACS WEBMANAGER + PC	BACS_CC2_TP
3 BACS WEBMANAGER + PC	BACS_CC3_TP
4 BACS WEBMANAGER + PC	BACS_CC4_TP
5 BACS WEBMANAGER + PC	BACS_CC5_TP
6 BACS WEBMANAGER + PC	BACS_CC6_TP