

DAC60000 SERIES

24VDC-220VDC Inverters for industrial backup systems



24V 48/60V 110/125V 220/230V

Modular power conversion architecture 1-24kVA
1-phase and 3-phase secured AC supply
True redundant n+1 system, hot swap modules
Natural cooled and fan cooled modules



- Modular systems and stand-alone inverters
- On-line/Off-line configuration
- 6kVA and 30kVA bypass units
- Complete systems solutions
- AC-distribution
- Double battery bank supply solutions for power transmission backup systems
- RS-232 access for local parameters
- Relays and SNMP for remote monitoring

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| PARALLEL CONNECTABLE INVERTER MODULES | | | | | | | |
|---------------------------------------|------------------|----------------|-------------------|---------------|-------------|----------------------------|--------|
| Type | Nominal DC input | DC input Range | Nominal AC output | Nominal Power | Cooling | Dimensions Without handles | Weight |
| DAC62132VF | 24VDC | 20...32VDC | 230VAC, 50Hz | 1000VA/600W | Convection | 14TE x 6U x 372mm | 4 kg |
| DAC62232VF | 24VDC | 20...32VDC | 230VAC, 50Hz | 1200VA/800W | Forced, fan | 14TE x 6U x 372mm | 4 kg |
| DAC62134VF | 48/60VDC | 40...72VDC | 230VAC, 50Hz | 1000VA/700W | Convection | 14TE x 6U x 372mm | 4 kg |
| DAC62234VF | 48/60VDC | 40...72VDC | 230VAC, 50Hz | 1200VA/1200W | Forced, fan | 14TE x 6U x 372mm | 4 kg |
| DAC62135VF | 110/125VDC | 88...150VDC | 230VAC, 50Hz | 1000VA/700W | Convection | 14TE x 6U x 372mm | 4 kg |
| DAC62235VF | 110/125VDC | 88...150VDC | 230VAC, 50Hz | 1200VA/1200W | Forced, fan | 14TE x 6U x 372mm | 4 kg |
| DAC62136VF | 220/230VDC | 178...275VDC | 230VAC, 50Hz | 1000VA/700W | Convection | 14TE x 6U x 372mm | 4 kg |
| DAC62236VF | 220/230VDC | 178...275VDC | 230VAC, 50Hz | 1200VA/1200W | Forced, fan | 14TE x 6U x 372mm | 4 kg |

| 19" 2U MECHANICAL ADAPTERS FOR HORIZONTAL INSTALLATION | |
|--|---|
| MSR7990+ DAC type | 1200VA fan cooled inverter in 19" 2U installation |
| ADU68230+ DAC type | 1200VA fan cooled inverter and AC-distribution (4 x MCB) in 19" 2U installation |

| STATIC SWITCH + MANUAL BYPASS | |
|-------------------------------|--|
| Type | Description |
| BPU69130VF | External static switch, 6000VA 230VAC, 14TE x 6U x 372mm module |
| MSR7990+BPU69130VF | External static switch, 6000VA 230VAC, 19" x 2U x 372mm |
| BPU69430FR + MBP68400 | External static switch and manual bypass, 30kVA 230VAC, 19" x 3U x 480mm |
| MBP68000 / MBP68200 | See separate datasheets for 6U and 2U manual bypass solutions |

| ACCESSORIES | |
|-------------|---|
| Type | Description |
| MSR7990 | 19" 2U adapter for 6U 14TE inverter and static switch modules |
| WMA7830 | Wall mounting adapter for 6U 14TE inverter, 1-3 modules can be mounted to one compact package |
| 68200014 | 19" Subrack 6U 300mm for 1-6pcs of 14TE 6U models (note inverter's depth 372mm) |
| 88680001 | 19" Subrack 7U 300mm for 1-6pcs of 14TE 6U models including parallel connection cables |
| 88680000 | Wall mountable 19" Subrack 7U 475mm for 1-6pcs of 14TE 6U models, shielded enclosure |
| 88600000 | Coverplate set for empty module place in 19" 6U subrack |
| 8760038 | Communication system bus cable for 1...6 modules |
| 876003H | Communication system bus cable for 1...12 modules |
| 8760037 | RS232 computer cable for inverters or 6kVA STS, D9 pins (includes Remote monitoring software in CD) |
| 8781832 | RS232 computer cable for 30kVA STS, D15 pins (includes Remote monitoring software in CD) |
| 8781836 | Communication adapter cable between inverter system bus D9 connector and 30kVA STS D15 connector |
| 8760039 | Power cable between 6kVA static switch and inverter |

| AC-DISTRIBUTION |
|---|
| See separate datasheets for AC-distribution solutions |

The Inverter packing includes following:

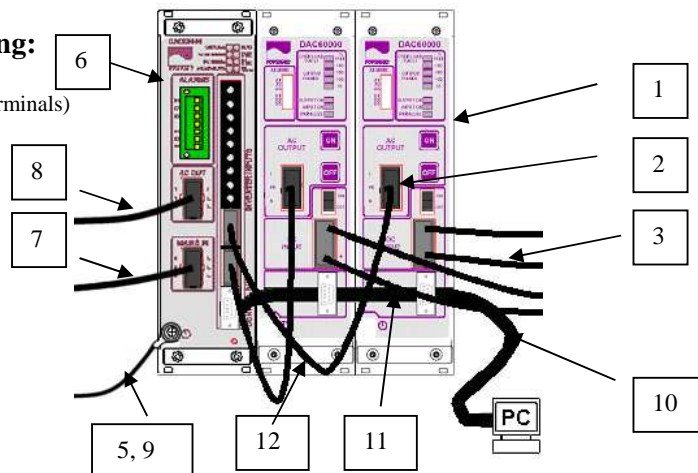
- 1) Inverter
- 2) AC output connector (finger protected screw terminals)
- 3) DC input cable 3m 2.5mm²
- 4) User manual
- 5) Grounding cable 3m 2.5mm²

The Static Switch packing includes:

- 6) Static Switch
- 7) Mains Input cable 2m 4,5 mm²
- 8) AC output cable 2m 4,5 mm²
- 9) Grounding cable 2m 6mm²

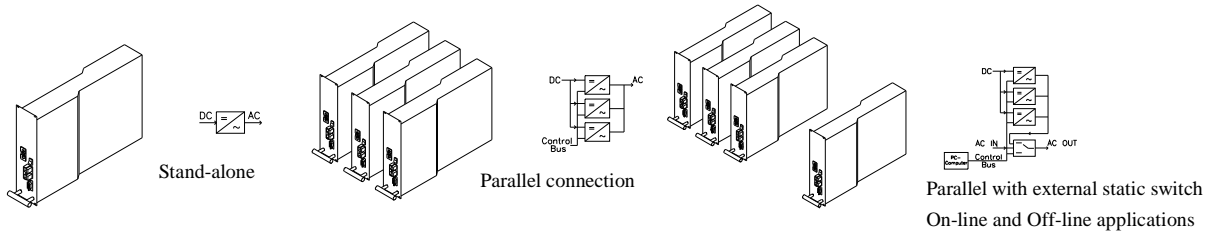
To be ordered separately

- 10) RemoteMonitor software in CD and Remote monitoring cable PC-Inverter(s)
- 11) Communication system bus cable
- 12) Power cable static switch – inverters 1m 1,5 mm²

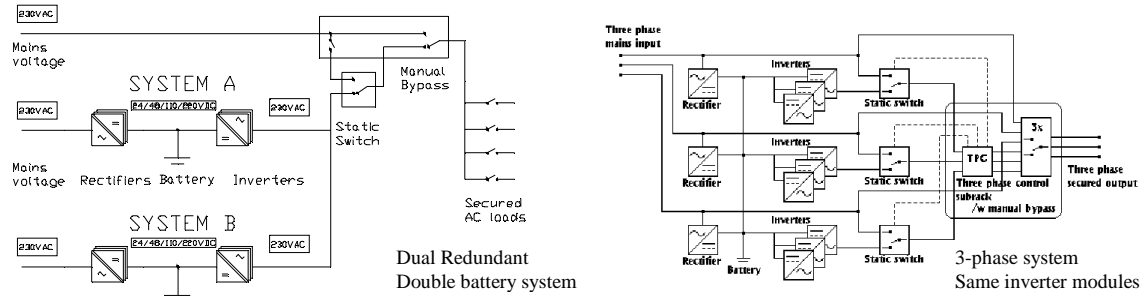


| SPECIFICATION INVERTERS | 24VDC | | 48/60VDC | | 110/125VDC | | 220/230VDC | |
|--|---|------------------|-----------------------|-------------------|-------------------------|-------------------|-------------------------|-------------------|
| | 1000VA | 1200VA | 1000VA | 1200VA | 1000VA | 1200VA | 1000VA | 1200VA |
| ELECTRICAL | | | | | | | | |
| Input voltage | 20-32 VDC | | 40-72 VDC | | 88-150 VDC | | 178-275 VDC | |
| | User programmable (PC/RS-232) start-up and shut down voltage limits and delays | | | | | | | |
| Input current, max continuous | 37 A | 50 A | 22 A | 35 A | 10 A | 16 A | 5 A | 8 A |
| Input current, max 5 sec peak | 75 A | 75 A | 50 A | 50 A | 22 A | 22 A | 11 A | 11 A |
| Inrush current | < 30 A | | < 20 A | | < 10 A | | < 10 A | |
| Output voltage | Nominal 230 VAC sine wave, user programmable 200-240V, floating output | | | | | | | |
| Output frequency | Nominal 50 Hz, user programmable 40 - 70 Hz, crystal locked | | | | | | | |
| Nominal output power | 1000VA / 600W | 1200VA / 800W | 1000VA / 700W | 1200VA / 1200W | 1000VA / 700W | 1200VA / 1200W | 1000VA / 700W | 1200VA / 1200W |
| Overload, 5 seconds | 1200 W | | 1700 W | | 1700 W | | 1700 W | |
| Overload, 60 seconds | 110% for all models, max time can be limited shorter Number of restart attempts and delays are user programmable | | | | | | | |
| Output current, nominal | 4.4 A | 5.2 A | 4.4 A | 5.2 A | 4.4 A | 5.2 A | 4.4 A | 5.2 A |
| Max short circuit current, 1-4 sec | 13 A | 13 A | 13 A | 13 A | 13 A | 13 A | 13 A | 13 A |
| Efficiency | 85 % | 83 % | 90 % | | 90 % | | 90 % | |
| Load power factor range | Full power rating from 0 inductive to 0 capacitive | | | | | | | |
| Total harmonic distortion, resistive load | < 2 % | | | | | | | |
| Crest factor | > 3 | > 2.7 | > 3 | > 2.7 | > 3 | > 2.7 | > 3 | > 2.7 |
| Static regulation, 0...100% load | 3% | | | | | | | |
| Transient recovery | < 0.3 ms | | | | | | | |
| Psometric noise, input | N/A | | < 2 mV | | N/A | | N/A | |
| Isolation | Input-Chassis 1500 VAC (2000 VCD) Input-Output 3000 VAC (4000 VDC) Output-Chassis 1500 VAC (2000 VDC) | | | | | | | |
| Protection | Output current limiting Overload and short circuit proof Internal input and output fuses | | | | | | | |
| DC input fuse (external fuse needed) | max C 63A | | max C 40A | | max C 25A | | max C 16A | |
| STANDARDS | | | | | | | | |
| Safety | EN 60950-1 | | | | | | | |
| EMC | 48/60VDC inverters: EN 55022B, EN61000-6-3, EN61000-6-2, ETS 300 132-2, BTNR 2511 24VDC, 110/125VDC and 220VDC inverters: EN 55022A, EN61000-6-4, EN61000-6-2 Static Switch: As 48/60V inverters except immunity: EN61000-4-3 radiated immunity according to EN61000-6-1, other immunity standards EN61000-6-2 | | | | | | | |
| ALARMS, INDICATIONS AND CONTROLS | | | | | | | | |
| LED-Indications | Input ON Output ON Output loading, 4 levels: >5%, >30%, >50%, >80% Overload / Fault | | | | | | | |
| Relay alarms | 2 relay contacts: Fault in system summary alarm (module failure, DC input low etc) Primary supply failure (system with bypass) or Output ON indication (system without bypass) Relay contact ratings: 24-48VDC: 60VDC/1A, 110VDC: 125VDC/0.4A, 220VDC: 250VDC/0.2A | | | | | | | |
| Remote monitoring through RS-232 (Remote monitoring software) | Status information: For example input and output voltage, power, temperature, faults etc. Parameter adjustment: For example input voltage limits, output voltage, over load, faults etc. | | | | | | | |
| MECHANICAL | | | | | | | | |
| Dimensions | See first page | | | | | | | |
| Connectors in front panel | Input DC connector: Anderson SB506331 G4 Output: Finger protected AC-connector, Wieland ST18/3S2 | | | | | | | |
| Enclosure | Steel casing IP20 | | | | | | | |
| ENVIRONMENTAL | | | | | | | | |
| Operating temperature / Humidity | 0...+45 °C full power +45...+60 °C reduced power, derating -2%/C typically, no condensation | | 0...+45 °C full power | | -10...+45 °C full power | | -10...+45 °C full power | |
| Cooling (Fans are redundant and monitored) | Natural convection | Fan cooling | Natural convection | Fan cooling | Natural convection | Fan cooling | Natural convection | Fan cooling |
| Altitude | Full power up to 2000m, derating -2% / 100m, max altitude 3000m | | | | | | | |

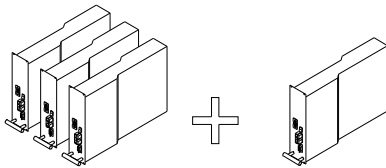
CONFIGURATIONS & SYSTEM ARCHITECTURES



SPECIAL SYSTEMS



EXPANDING SYSTEM



More power needed or unit replacement

No need to shut down system output

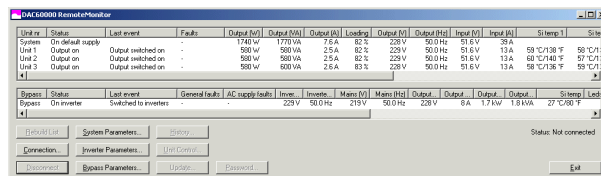
- 1) Connect cables: DC cable, AC cable, System bus
- 2) Turn new unit on
 - Automatically enters system
 - Automatically adapts system parameters (voltage, frequency etc.)
 - Automatically turns output on if the system output is on

COMPLETE INVERTER SYSTEMS, AC- AND DC-DISTRIBUTION



MCB distribution panels, Schuko outlets
IEC320 outlets
Customized inverter system configurations

REMOTE MONITORING SOFTWARE AND SNMP



Continuous status information from all units:

- Output on/standby, voltage, current, power, loading per cent
 - Input voltage and current, Internal temperatures, faults
- Parameter adjustment (without turning system output off):
- Inverter start up and shut down input voltage limits, reaction delays
 - Output voltage and frequency, number of restart attempts
 - Bypass synchronising frequency range, accepted voltage ranges etc.

History file reading for last 30-40 events per module
Remote monitoring by SNMP

RELIABILITY

Real redundancy - No single failure may fail the system

No external controller

- No other master slave dependence but synchronising
- If synchronising master fails, next unit starts sending the synchronising data

Rugged system bus structure with galvanic isolation

Automatic bus address configuring

- No need for address setup by user
- No malfunctions because of wrong setup

Self tests and diagnostics

- Full automatic power stage test every time inverter is started
- Continuous monitoring of internal operations
- Error counters (RS-232) for troubleshooting
- Recognising of wrong connections (cable not connected, wrong AC bus polarity)

Recovery and monitoring procedures in hardware and software

- Stands disturbances in system bus
- Stands accidental system bus disconnecting for seconds
- Stands wrong connections of cables
- If one unit fails other units alarm
- Voting procedures for recognising and filtering wrong operation

Automatic fast shut down of failed unit

- Disconnecting from AC bus in 10 ms
- Automatic watch dog restart if processor hangs up
- Unit automatically turns output off if synchronising lost for too long time

Internal history file in each inverter, last 30-40 system and unit specific events