

DATA SHEET

BS2000/OSD Business Server S165

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The S165 Business Server is the best-in-class mainframe platform developed for use in the Dynamic Data Center to support all vital business processes. It combines remarkable flexibility and an outstanding total cost of ownership (TCO) for fulfilling business-critical IT production requirements.

S165 business servers boast unrivaled transaction security as well as ultrahigh availability and scalability, and feature excellent workload management. They are ideally suited for server consolidation projects and for implementing service-oriented architectures (SOA) while at the same time integrating proven commercial applications.

Very highly integrated CMOS VLSI semiconductor ICs implemented in copper technology are used together with single-chip modules, giving the S165 business servers an exceptionally small footprint and making them extremely frugal in terms of power consumption as well as quiet.

The standout feature of the S165 business servers is the newly developed processor, which is produced in advanced 90 nm technology and delivers considerably more power to the applications. The series comprises eight models: the S165-1RB, S165-10A, S165-10B, S165-10C, S165-10D (1 CPU), S165-20A, S165-20B, S165-20D (2 CPUs) and S165-30D (3 CPUs).

All S165 models are equipped with a standby ("hot spare") processor which is activated dynamically if a processor fails and serves as a replacement for the defective processor. This means the applications can continue running without interruption and with no degradation in performance.

With the optional CoD (Capacity on Demand) feature, additional processors can be temporarily attached or detached without system interruption. This enables the available performance to be flexibly matched to the changing needs of the application.

Model upgrades can easily be performed in the field.

The S165 models support programs using virtual 31- or 24-bit addresses as well as ESA data spaces.

Large address spaces being used by a number of applications for their data call for a sufficiently large main memory if intensive paging is to be avoided. At the same time there is an increased requirement for main memory capacity to support input/output caching in order to provide faster file access in performance-critical applications and increase input/output throughput.

For this reason the S165 series provides an addressing mode for large main memories in the shape of the Real Address Extension Feature: With this, a virtual address (31-bit) is converted with hardware support into an extended real address (40-bit).

Main memory can be upgraded to max. 32 GB on all S165 models. Preparations are already in place for memory expansion up to 64 GB.

A Global Storage (GS) is available as an option to boost system throughput and provide faster access to performance-critical data. A GS can be upgraded to max. 64 GB.

Two GS units can be used in parallel to enhance the failsafe characteristics of this high-speed memory and increase the size of the usable storage space to 128 GB.

The GS units are directly connected to the computer-internal main memory controller via fiber optic cable links (20 m). Optional battery units provide backup power to ensure the data in the GS is not lost in the event of a power outage.

The input/output system (Dynamic Channel Subsystem) offers extensive and flexible expansion options. Up to four input/output processors providing up to 128 channels in total can be configured for connecting peripheral devices with Type 2, Type S or Type FC channel interfaces.



To increase performance and availability, several S200 business servers can be configured into a HIPLEX cluster. S165 servers can be used with BS2000/OSD as of V5.0 and with VM2000 as of V8.0.

With respect to processor performance and scalability the Business Servers S165 are positioned below the Business Servers S200.

PROCESSORS

Model Processors ¹⁾

| | |
|----------|---|
| S165-1RB | 1 |
| S165-10A | 1 |
| S165-10B | 1 |
| S165-10C | 1 |
| S165-10D | 1 |
| S165-20A | 2 |
| S165-20B | 2 |
| S165-20D | 2 |
| S165-30D | 3 |

1) All models are additionally equipped with a standby processor ("hot spare CPU")

| | |
|--------------------------------|-------|
| Each processor features | |
| First-level cache (KB) | 256 |
| Second-level cache (MB) | 4 |
| Addressing width (bits) | 24/31 |
| ESA addressing for data spaces | yes |
| Real Address Extension Feature | yes |

INPUT/OUTPUT SYSTEM

| | |
|-----------------|---------------------------------|
| Model | Number of I/O processors |
| All S165 models | 1 or 2 |

| | |
|--------------------|---------------------------|
| Module type | Channels/increment |
| Type 2 channels | max. 60/4 |
| Type S channels | max. 128/8 ¹⁾ |
| Type FC channels | max. 16/2 |

| | |
|----------------------|---------------------------|
| | Maximum data rates |
| Type 2 channel | |
| Block multiplex mode | 4.5 (MB/s) |
| Type S channels | |
| CNC, CTC mode | 17 (MB/s) |
| CVC mode | 4.5 (MB/s) |
| Type FC channel | |
| | 100 (MB/s) |
| | full duplex |

1) One Type S channel is required for connecting the SCP.

MAIN MEMORY

| | |
|----------------------------------|----------------------|
| Models | System boards |
| S165-1RB, -10A, -10B, -10C, -10D | 1 |
| S165-20A, -20B, -20D, -30D | 1 |

The Service Processor (SVP) and the external Service/Console Processor (SCP 3970-4x) in combination support the operation, monitoring, diagnostics and maintenance of the business servers and allow Teleservice. The SCP 3970-4x is based on PRIMERGY TX300 server technology and the Linux operating system. System operation and administration is implemented by means of a web interface and is also possible from remote workstations.

POWER ON/OFF CONTROLLER

| | |
|--------------------------------|-----------------------------|
| Power Control Interface | Interfaces/increment |
| PCI | 32 to 56/8 |
| ECI ¹⁾ | 8 |

1) For power on/off control of the GS.

GLOBAL STORAGE

| | |
|-------------------------|---------------------------------------|
| | Number |
| Global Storage units | 0; 1; 2 |
| Battery cabinets per GS | 0; 1 |
| Dual-write mode | yes ¹⁾ |
| Battery operation (h) | max. 24 |
| GS unit A and unit B | |
| Memory size (GB) | 2, 3, 4, 6, 8, 12, 16, 24, 32, 48, 64 |

1) Symmetrical expansion of GS unit A+B necessary.

SERVICE PROCESSOR

Ports:

- 1 service processor LAN (CSMA/CD, 10Base-T)
- 1 service interface (FST)
- 1 power on/off interface for S165 business servers

Optional ports

- 1 service processor LAN (CSMA/CD, 10Base-T) for connecting a 2nd GS unit or a redundant SCP

SERVICE/CONSOLE PROCESSOR SCP 3970

based on a Primergy server with ports for:

- 1 local console (monitor, keyboard, mouse)
- 1 Teleservice modem (V.24)
- Connection to administration and operation LAN
- 2 connections to service processor LAN
- 1 Type S channel of the basic cabinet

Optional ports for:

- Power on/off box for switching on the S165 via the SCP 3970

Memory size (GB)

| | |
|-------------------------|-----------------------|
| MM module Type A | Type B |
| 1, 2, 4, 6, 8, 12, 16 | 8, 12, 16, 20, 24, 32 |
| 1, 2, 4, 6, 8, 12, 16 | 8, 12, 16, 20, 24, 32 |

S165 installation data

| ELECTRICAL | Cabinet 1 ¹⁾ | | Cabinet 3 to 6 ¹⁾ | |
|---|---|--------------------------------|---------------------------------------|---------------------------------------|
| Rated voltage (V) | 1x 200 – 240 ±10% | in each case 1x 200 – 240 ±10% | | |
| Rated frequency (Hz) | 50/60 ±1 | 50/60 ±1 | | |
| POWER CONNECTION | Cabinet 1 ¹⁾ | Cabinet 2 ¹⁾ | per cabinet 3; 4 ¹⁾ | per cabinet 5; 6 ¹⁾ |
| Power consumption (kVA) | 3.1 ⁵⁾ | 0,8 | 1.3 | 0.8 |
| Device fuse rating (A) per port | 30 | - | 10 | 10 |
| Connection type | 2x 3-wire ^{2a)} | - | 3-wire ^{2b)} | 3-wire ^{2b)} |
| With Dual Power Feed | 2x 3-wire ^{2a)} | - | 2x 3-wire ^{2b)} | 2x 3-wire ^{2b)} |
| MECHANICAL | Cabinet 1 ¹⁾ | Cabinet 2 ¹⁾ | per cabinet 3; 4 ¹⁾ | per cabinet 5; 6 ¹⁾ |
| Height (mm) | 1800 | 1800 | 1800 | 1800 |
| Width (mm) | 866 | 784 | 1240 | 680 |
| Depth (mm) | 898 | 898 | 898 | 850 |
| Weight max. (kg) | 550 | 350 | 400 | 250 |
| Footprint (W x D) (mm) ³⁾ | 890 x 2540 | 840 x 2450 | 1270 x 2450 | 690 x 2450 |
| EMISSIONS | Cabinet 1 ¹⁾ | Cabinet 2 ¹⁾ | per cabinet 3; 4 ¹⁾ | per cabinet 5; 6 ¹⁾ |
| Sound pressure level at workplace (dB(A)) | 59 | 59 | 48 | 50 |
| Heat dissipation [kJ/h] | 11000 | 2900 | 4450 | 2740 |
| ENVIRONMENTAL | Cabinet 1 to 6 ¹⁾ | | | |
| Operating environment to DIN IEC 721 | Class 3K2 | | | |
| Temperature (°C) | 10 – 32 | | | |
| Rel. humidity (%) | 20 ⁴⁾ – 80 | | | |
| STANDARDS COMPLIANCE | Cabinet 1 to 6 ¹⁾ | | | |
| Safety | EN 60950 | | | |
| Radiation emission, RFI suppression | EN 55022 A, EN 55024 and EN 6100-3-2/3 | | | |
| CE mark acc. to EU Directive | 2004/108/EC (EMC) and 2006/95/EC (product safety) | | | |

- 1) Cabinet 1 and 2: Basic cabinet (CPUs, I/O processors, channels, SVP, PCI)
 Cabinet 2: (optional, necessary for more than 12 channel groups, power supply by cabinet 1)
 Cabinet 3: Global Storage (unit A)
 Cabinet 4: Global Storage (unit B)
 Cabinet 5: Battery for Global Storage unit A
 Cabinet 6: Battery for Global Storage unit B
- 2) 2a) Connection with flexible lead connectors (EU standard) to commercially available power distributor or 3911 Power Distributor required
 2b) Permanently wired connection to commercially available power distributor or 3911 Power Distributor required
- 3) Installation area incl. space for operating and maintenance access
- 4) Limited range compared to 3K2
- 5) Power draw of max. configuration

SCP 3790-4x installation data

ELECTRICAL

| | |
|----------------------|------------|
| Rated voltage (V) | 100 – 240V |
| Rated frequency (Hz) | 50 - 60Hz |

POWER CONNECTION

| | |
|-------------------------|-------------------------------|
| Power consumption (kVA) | 0.809 |
| Effective power (kW) | 0.798 |
| Device fuse rating (A) | 2 x 10 |
| Dual power connection | 2 x 3-wire / grounding outlet |

MECHANICAL

Tower / Rack

| | |
|--------------------------------------|-------------------------|
| Height (mm) | 473 / 177 |
| Width (mm) | 286 / 483 |
| Depth (mm) | 775 / 770 |
| Weight (kg) | 25 - 40 |
| Footprint (W x D) (mm) ¹⁾ | 290 x 1790 / 700 x 2800 |

EMISSIONS

| | |
|-----------------------------------|------------|
| Sound pressure level at workplace | |
| LpAm (dB(A)) | ≤ 47 |
| Heat dissipation | ≤2873 kJ/h |

ENVIRONMENTAL

| | |
|--------------------------------------|-----------|
| Operating environment to DIN IEC 721 | Class 3K2 |
| Temperature (°C) | 15 – 35 |
| Rel. humidity (%) | 10 – 75 |

STANDARDS COMPLIANCE

| | |
|--------------------------------------|---|
| Safety | IEC 60950-1 / EN 60950 UL 60950-1 CAN/CSA C22.2 No.60950-1-03 |
| Radiation emissions, RFI suppression | EN 55022 Class A, EN55024, EN 61000-3-2 / 3-3 FCC Class A CNS 13438 Class A / VCCI Class A AS / NZS CISPR 22 Class A |
| CE mark acc. to EU Directive | 89/336/EEC (EMI); 73/23 EEC (LVD) |

1) Installation area incl. space for operating and maintenance access

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