

## S190 BUSINESS SERVERS

### S190-30, -40, -65, -80, -100, -120, -140, -150

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The S190 Business Server models form a series of powerful computers specifically designed for commercial applications. They run under the BS2000/OSD operating system, which supports especially in the operating mode OLTP for the secure handling of e-business application and batch processing. Highlights of the S190 Business Server range are its small footprint, its energy savings and its quiet operation, thanks to the use of VLSI (Very Large Scale Integrated) CMOS technology with Cu bonding and single chip modules, as well as compact rack-mount technology.

The S190 Series consists of the following models: S190-30 (three CPUs), the S190-40 (four CPUs), S190-65 (six CPUs), S190-80 (eight CPUs), S190-100 (ten CPUs), S190-120 (twelve CPUs) S190-140 (fourteen CPUs) and S190-150 (fifteen CPUs).

All models of the S190 series come with a spare CPU which, in case of a CPU failure, will be activated dynamically to replace the failed CPU. The data processing is thus continued without interruption or performance degradation.

With OSD V5.0 (or higher) additional CPUs can be added or removed dynamically while the system is running (Capacity on Demand)

Field installation of upgrades can easily performed.

The S190 models support programs with virtual 31- or 24-bit addresses.

A characteristic feature of new applications is the use of larger and larger address spaces as a result of the implementation of complex functions, object-oriented programming systems and advanced program development methods.

When large address spaces are accessed by many tasks, an appropriately large main memory capacity is required in order to avoid intensive paging. At the same time there is an increased requirement for main memory resources to support input/output caching in order to speed up file accesses in performance-critical applications and increase input/output throughput. In addition to ESA addressing, therefore, the models in the S190 series provide a further addressing mode, called the Real Address Extension Feature: With this, a virtual address (31-bit) is converted with hardware support into an extended real address (40-bit).

The main memory capacity of the models S190-30 and -40 can be expanded to 32 Gbytes and of the models S190-65,-80, -100, -120, -140, -150 to 64 Gbytes.

For the increase of throughput and access to performance-critical data a shared Global Storage (GS) is available optionally. The GS can be upgraded to max x 64B in size.

Two independently usable GS units, each with a capacity of max. 64 Gbytes as well as remote installation (max. 70 m), increase the fail-safe characteristics of high-speed memory. The GS units are directly connected to the computer-internal memory control unit via fiber-optic cable.

Two optional GS battery units provide backup power to ensure that the data in the GS is not lost as a result of a mains power outage.

The input/output system (dynamic channel subsystem) offers extensive and flexible expansion options. It is possible to configure up to four input/output processors, providing a total of max. 256 channels for connection of peripheral devices with Type 2, Type S, Type F or Type FC channel interfaces.

In addition, thanks to the Type S channel converter, users are assured of a flexible entry into Type S channel technology while at the same time safe-guarding their existing investment.

The service processor (SVP) and the external service/console processor jointly support operation, monitoring, diagnostics and maintenance of the computer, as well as TELESERVICE.

For the increase of the capability and the availability a number of models of the S-series to a HIPLEX cluster can be configured.



**CENTRAL PROCESSORS**

| Model    | Centralprocessors <sup>1)</sup> |
|----------|---------------------------------|
| S190-30  | 3                               |
| S190-40  | 4                               |
| S190-65  | 6                               |
| S190-80  | 8                               |
| S190-100 | 10                              |
| S190-120 | 12                              |
| S190-140 | 14                              |
| S190-150 | 15                              |

**Per central processor**

|                                |       |
|--------------------------------|-------|
| First-level cache (KB)         | 256   |
| Second-level cache (Mbytes)    | 2     |
| Addressing width (bit)         | 24/31 |
| ESA addressing for dataspace   | yes   |
| Real address extension feature | yes   |

1) All models are equipped with one hot-spare CPU.

**INPUT/OUTPUT SYSTEM**

| Model  | Input/output processors |
|--|-------------------------|
| S190-30, -40, -65, -80, -100, -120, -140, -150 | max 4                   |

| Module type      | Channels/increment       |
|------------------|--------------------------|
| Type 2 channels  | max. 64/4                |
| Type S channels  | max. 256/8 <sup>1)</sup> |
| Type F channels  | max. 60/2                |
| Type FC channels | max. 32/2                |

**Maximum data rates**

|                        |                        |
|------------------------|------------------------|
| Input/output processor | 1.8 (GB/s)             |
| Type 2 channel         |                        |
| Block multiplexer mode | 4.5 (MB/s)             |
| Type S channel         |                        |
| CNC, CTC mode          | 17 (MB/s)              |
| CVC mode               | 4.5 (MB/s)             |
| Type F/FC channel      |                        |
| Bridge mode/ FC mode   | 100 (MB/s) full duplex |

1) 1 type S channel is required for connection of the service/console processor.

**ON/OFF POWER CONTROL**

| Power Control Interface | Interfaces/increment |
|-------------------------|----------------------|
| PCI                     | 32 to 56/8           |
| ECl <sup>1)</sup>       | 8                    |
| OCI                     | 0; 2                 |

1) For power on/off control of GS.

**MAIN MEMORY**

| Model                                | MM Module No. | Memory Capacity (GB) |                    |
|--------------------------------------|---------------|----------------------|--------------------|
|                                      |               | MM Module Type A     | Type B             |
| S190-30, -40,                        | 2             | 4, 8, 12, 16         | 8, 12, 16, 24, 32  |
| S190-65, -80, -100, -120, -140, -150 | 4             | 4, 8, 12, 16, 24, 32 | 16, 24, 32, 48, 64 |

**GLOBAL STORAGE**

|                         | Number                    |     |     |
|-------------------------|---------------------------|-----|-----|
| Global Storage units    | 0, 1, 2                   |     |     |
| Battery cabinets        | 0, 1, 2                   |     |     |
| Dual-write mode         | yes <sup>1)</sup>         |     |     |
| Battery operation (h)   | max. 24                   |     |     |
| GS unit A and GS unit B |                           |     |     |
| GS module type          | A                         | B   | C   |
| Chip technology (Mbit)  | 128                       | 256 | 512 |
| GS module               | Memory configuration (GB) |     |     |
| Type A+B                | 2, 3, 4, 6, 8             |     |     |
| Type B+C                | 8, 12, 16, 24, 32, 48, 64 |     |     |

1) Symmetrical expansion of GS units A + B required.

**SERVICE PROCESSOR**

**Ports in basic configuration:**

- 1 service processor LAN (CSMA/CD, 10Base-T)
- 1 service interface (FST)
- 1 Business Server S190 On/Off

**Optional port:**

- 1 service processor LAN (CSMA/CD, 10Base-T)

**SERVICE/CONSOLE PROCESSOR**

**Based on a PC server with ports for:**

- 1 main console ( monitor, keyboard, mouse)
- 1 printer with parallel interfaces
- 1 V.24 device (radio clock, ATOP, console)
- 1 TELESERVICE modem (V.24)
- 2 service processor LAN (CSMA/CD, 10Base-T)
- 1 channel type S of the basic cabinet

**Optional ports for:**

- Max. 8 V.24- devices

**TYPE S CHANNEL CONVERTER**

| Ports for:                   | Number |
|------------------------------|--------|
| Type S Channel               | 2      |
| Type 2 Channel <sup>1)</sup> | 2      |

1) For connection of peripherals; block multiplex mode (data rate: 4.5 MB/s max.).

**Installation Data:**

| <b>Electrical</b>                         | <b>Cabinet 1 <sup>1)</sup></b>  |   | <b>Cabinet 3to 6 <sup>1)</sup></b> |                                  |
|---|---|---|------------------------------------|----------------------------------|
| Rated voltage (V)                         | 3x 200 – 240 ±10%   |   | 200 – 240 ±10%                     |                                  |
| Rated frequency (Hz)                      | 50/60 ±1  |   | 50/60 ±1                           |                                  |
| <b>Power</b>                              | <b>Cabinet 1 <sup>1)</sup></b>  |   | <b>Cabinet 3,4 <sup>1)</sup></b>   | <b>Cabinet 5,6 <sup>1)</sup></b> |
| Power consumption (kVA)                   | 6.6 <sup>5)</sup>   | - | 1.3                                | 0.8                              |
| Effective Power (kW)                      | 1.8   |   | 0.96                               | 0.73                             |
| Fuse rating (A)                           | 30  |   | 10                                 | 10                               |
| Connection type                           | 3x 3wire <sup>2)</sup>  |   | 3-wire <sup>2)</sup>               | 3-wire <sup>2)</sup>             |
| <b>Physical</b>                           | <b>Cabinet 1 <sup>1)</sup></b>  |   | <b>Cabinet 3,4 <sup>1)</sup></b>   | <b>Cabinet 5,6 <sup>1)</sup></b> |
| Height (mm)                               | 1800  |   | 1800                               | 1800                             |
| Width (mm)                                | 1670  |   | 1280                               | 680                              |
| Depth (mm)                                | 936   |   | 936                                | 850                              |
| Weight (kg)                               | 1000  |   | 400                                | 180                              |
| Footprint (W x D) (mm) <sup>3)</sup>      | 1670 x 2450   |   | 2450 x 1214                        | 2680 x 2850                      |
| <b>Noise emission</b>                     | <b>Cabinet 1 to 6 <sup>1)</sup></b>   |   |                                    |                                  |
| Sound pressure level at workplace (dB(A)) | ≤60   |   |                                    |                                  |
| <b>Environmental</b>                      | <b>Cabinet 1 to 6 <sup>1)</sup></b>   |   |                                    |                                  |
| Operating environment to DIN IEC 721      | class 3K2   |   |                                    |                                  |
| Temperature (°C)                          | 15 – 32   |   |                                    |                                  |
| Rel. humidity (%)                         | 20 <sup>4)</sup> – 75   |   |                                    |                                  |
| <b>COMPLIANCE WITH STANDARDS</b>          | <b>Cabinet 1 to 6 <sup>2)</sup></b>   |   |                                    |                                  |
| Safety                                    | EN 60950  |   |                                    |                                  |
| Radiation emission, RFI suppression       | In preparation: UL 1950 protection class 1<br>EN 55022 A, EN 50082-1 and EN 6100-3-2/3<br>In preparation: FCC class A |   |                                    |                                  |
| CE mark in accordance with EU Directive   | 89/336/EEC (RFI) and 73/23/EEC (product safety)   |   |                                    |                                  |

- 1) Cabinet 1: Basic cabinet (2 frames; central processors, input/output processors, channels, SVP, PCI)  
 Cabinet 2 Global Storage (Unit A)  
 Cabinet 3 Global Storage (Unit B)  
 Cabinet 4 Battery for Global Storage Unit A  
 Cabinet 5 Battery for Global Storage Unit B

- 2) 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 consumption for max. configuration

**Installation Data:**

|  | SCP<br>3970-2xx | OCI Converter<br>S180P-E65 | TYPE S Channel Converter<br>3954-2 |
|--|-----------------|----------------------------|------------------------------------|
|--|-----------------|----------------------------|------------------------------------|

**Electrical**

|                      |                |                |                |
|----------------------|----------------|----------------|----------------|
| Rated voltage (V)    | 200 – 240 ±10% | 200 – 240 ±10% | 200 – 240 ±10% |
| Rated frequency (Hz) | 50/60 ±1%      | 50/60 ±1%      | 50/60 ±1%      |

**Power**

|                         |                            |                          |                          |
|-------------------------|----------------------------|--------------------------|--------------------------|
| Power consumption (kVA) | 0.65                       | 0.1                      | 0.15                     |
| Effective power (kW)    | 0.5                        | 0.05                     | 0.12                     |
| Fuse rating (A)         | 2x 10                      | 10                       | 10                       |
| Connection              | 2x 3-wire/grounding outlet | 3- wire/grounding outlet | 3- wire/grounding outlet |

**Physical**

|                                      |           |            |            |
|--------------------------------------|-----------|------------|------------|
| Height (mm)                          | 460       | 159        | 135        |
| Width (mm)                           | 280       | 500        | 425        |
| Depth (mm)                           | 685       | 580        | 480        |
| Weight (kg)                          | 20        | 20         | 15         |
| Footprint (W x D) (mm) <sup>1)</sup> | 280 x 685 | 2080 x 700 | 525 x 2080 |

**Noise Emission Values**

|   |     |     |
|---|-----|-----|
| Sound pressure level at workplace (dB(A)) | ≤40 | ≤50 |
|---|-----|-----|

**Environmental**

|                                      |           |                       |
|--------------------------------------|-----------|-----------------------|
| Operating environment to DIN IEC 721 | Class 3K2 | Class 3K2             |
| Temperature (°C)                     | 15 – 32   | 15 – 32               |
| Rel. humidity (%)                    | 10 – 75   | 20 <sup>2)</sup> – 75 |

**COMPLIANCE WITH STANDARDS**

|   | SCP   | OCI Converter + TYPE S Channel Converter                  |
|---|---|---|
| Safety                                  | EN 60950<br>UL 1950 Protection Class 1                | EN 60950<br>In preparation:<br>UL 1950 Protection Class 1 |
| Radiation emissions, RFI suppression    | EN 55022 B,<br>EN 50082-1<br>FCC Class A              | EN 55022 B and EN 50082-1<br>In preparation: FCC Class A  |
| CE mark in accordance with EU Directive | 89/336/EEC (RFI) (EMC) and 73/23/EEC (product safety) |   |

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

2) Limited range compared to 3K2