

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 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 ¹⁾
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 ¹⁾
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
ECI ¹⁾	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 ¹⁾		
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 ¹⁾	2

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

Installation Data:

Electrical	Cabinet 1 ¹⁾	Cabinet 3to 6 ¹⁾	
Rated voltage (V)	3x 200 – 240 ±10%	200 – 240 ±10%	
Rated frequency (Hz)	50/60 ±1	50/60 ±1	
Power	Cabinet 1 ¹⁾	Cabinet 3,4 ¹⁾	Cabinet 5,6 ¹⁾
Power consumption (kVA)	6.6 ⁵⁾	-	0.8
Effective Power (kW)	1.8	0.96	0.73
Fuse rating (A)	30	10	10
Connection type	3x 3wire ²⁾	3-wire ²⁾	3-wire ²⁾
Physical	Cabinet 1 ¹⁾	Cabinet 3,4 ¹⁾	Cabinet 5,6 ¹⁾
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) ³⁾	1670 x 2450	2450 x 1214	2680 x 2850
Noise emission	Cabinet 1 to 6 ¹⁾		
Sound pressure level at workplace (dB(A))	≤60		
Environmental	Cabinet 1 to 6 ¹⁾		
Operating environment to DIN IEC 721	class 3K2		
Temperature (°C)	15 – 32		
Rel. humidity (%)	20 ⁴⁾ – 75		
COMPLIANCE WITH STANDARDS	Cabinet 1 to 6 ²⁾		
Safety	EN 60950		
Radiation emission, RFI suppression	In preparation: UL 1950 protection class 1 EN 55022 A, EN 50082-1 and EN 6100-3-2/3 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 3970-2xx	OCI Converter S180P-E65	TYPE S Channel Converter 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) ¹⁾	280 x 685	2080 x 700	525 x 2080

Noise Emission Values

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

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

COMPLIANCE WITH STANDARDS

	SCP	OCI Converter + TYPE S Channel Converter
Safety	EN 60950 UL 1950 Protection Class 1	EN 60950 In preparation: UL 1950 Protection Class 1
Radiation emissions, RFI suppression	EN 55022 B, EN 50082-1 FCC Class A	EN 55022 B and EN 50082-1 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