

## 5.4 IF260

### 5.4.1 General Information

The IF260 module can be used either as a CPU or as a programmable interface processor. The module recognizes the correct operating mode from the slot used (slot 3 -> CPU module). Usually, the module is used as an interface processor to relieve the strain on the CPU. The IF260 module is equipped with a CPU section and an insert slot for interface modules.

The programmable interface processor (like with intelligent I/O processors) also has a local processor core with RISC processor, local RAM and operating system. The DPR area ("PPdpr" library) is used as a communication interface between CPU PLC and IF260. A project must be created for each parallel processor in B&R Automation Studio™.

The PLC CPU and the local processor always have access to this data area, which guarantees data consistency for data type UINT. Larger data structures cannot be used.

The insert slot for interface modules makes it possible to integrate different bus and network systems in the B&R SYSTEM 2005.

**5.4.2 Order Data**

Model Number	Short Description	Image
	<b>CPU or Programmable Interface Processor</b>	
3IF260.60-1	2005 CPU or progr. interface processor, 850 KB SRAM, 1.5 MB FlashPROM, 1 insert slot for interface module inserts	
	<b>Accessories</b>	
0G0001.00-090	Cable PC <-> PLC/PW, RS232, online cable	

Table 64: IF260 order data

**5.4.3 Technical Data**

Product ID	IF260
C-UL-US Listed	Yes
B&R ID Code	\$2A
Slot 3 ≥ 4	CPU operation Programmable interface processor operation
Power Consumption 5 V 24 V Total	Max. 3.5 W --- Max. 3.5 W
<b>Processor</b>	
Typical Instruction Cycle Time	0.4 μs
Memory Capacity System RAM User RAM System PROM User PROM	174 KB SRAM 850 KB SRAM 512 KB FlashPROM 1536 KB FlashPROM

Table 65: IF260 technical data

Product ID	IF260
Real-time Clock Resolution	Nonvolatile 1 s
Insert Slots	1 (for interface module inserts)
Reset Button	Yes
Status Display	5 Status LEDs
NC-Synchronization	Yes
Data Buffering Backup Battery in 2005 Backplane Buffering with AC240 Battery Module Buffering with NiMH Rech. Battery	At least 4 years At least 2.5 years At least 2 months
Battery Monitoring	Yes (when operated as main CPU)
Mechanical Characteristics	
Dimensions	B&R 2005 single-width

Table 65: IF260 technical data (cont.)

### 5.4.4 Status LEDs

Image	LED	Description
	READY	IF260 is active
	RUN	Application running
	MODE	Spool or programming function is active
	ERROR	SERVICE mode
	BAT	Battery and rechargeable battery empty

Table 66: IF260 status LEDs

### 5.4.5 Operational and Connection Elements

The operational elements, display elements and an insert slot for an interface module are behind the module door.

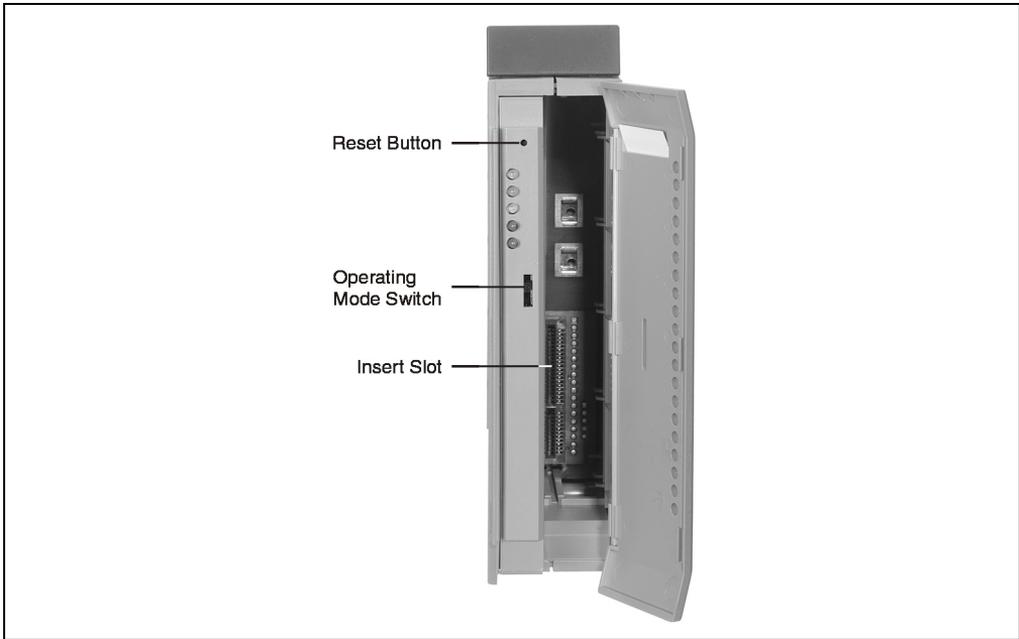


Figure 62: IF260 operational and connection elements

### 5.4.6 Reset Button

The reset button can be pressed with any small pointed object (e.g. paper clip). The reset button is protected by the module door. Depending on the operating mode, pressing the reset buttons has different effects.

Operating Mode	Effects
Interface Processor	Local Reset - All IF260 application programs are stopped
CPU	Local reset and global bus reset - All application programs are stopped - All outputs are set to zero

Table 67: IF260 reset button

### 5.4.7 Operating Mode Switch

The IF260 module is equipped with a sliding switch, which can be used as an operating mode switch. The switch setting can be evaluated by the application program at any time. If the switch position is changed during operation, a warning can be generated. The operating system only interprets the switch position when switched on.

Operating Mode Switch	Switch Position	Function
	0	In this switch position, the operating system can be programmed via the online interface. User Flash is only deleted after the update begins. The bootstrap loader mode is only required when PCCSW <2.0 is installed. The procedure is the same as described in Section 5.4.13 "Programming System Flash", on page 152. In an additional dialog box, the baud rate and the interface must only be set, from which a connection to the PLC is created.
	1	Run mode, the application is running.
	2	Reserved
	3	diagnostics mode

Table 68: IF260 operating mode switch

### 5.4.8 Insert Slot

The programmable interface processor has an insert slot for interface modules.

The insert slot for interface modules makes it possible to integrate different bus and network systems in the B&R SYSTEM 2005.

The following interface modules can be operated in the IF260:

Module	Description
3IF613.9	Interface module with three RS232 interfaces
3IF621.9	Interface module with one RS485/RS422 interface and one CAN interface
3IF622.9	Interface module with one RS232 interface and two RS485/RS422 interfaces
3IF661.9	Interface module with one RS485 interface (PROFIBUS DP slave)
3IF671.9	Interface module with one RS232 interface, one RS485/RS422 interface and one CAN interface
3IF672.9	Interface module with one RS232 interface and two CAN interfaces
3IF681.95	Interface module with one RS232 interface and one ETHERNET interface with 10 BASE2 connection (Cheapernet BNC-socket)
3IF681.96	Interface module with one RS232 interface and one ETHERNET interface with 10 BASE-T connection (Twisted Pair / RJ45-socket)
3IF686.9	2005 interface module, 1 ETHERNET Powerlink interface, manager or controller function, electrically isolated

Table 69: IF260 interface module inserts

### 5.4.9 Data/Realtime Buffering

#### The following areas are buffered

- User RAM
- System RAM
- Real-time clock

Buffering is carried out with a NiMH rechargeable battery and with a battery in the following order:

- 1) NiMH Rechargeable Battery: The rechargeable battery is located in the IF260.
- 2) Backup Battery: The backup battery is located either in the B&R 2005 rack or in the AC240 battery module

#### Battery Monitoring

If the IF260 module is operated as the CPU, the interface processor carries out cyclical monitoring of the battery voltage. The cyclic load test of the battery does not considerably shorten the battery life, instead it gives an early warning of weakened buffer capacity.

The status information, "Battery OK" is available to the user from the SYS\_lib function "SYS\_battery".

#### Battery Change Interval

See section "Backup Battery" in sections 2 "Module Racks" and 17.2 "AC240" (battery module).

### 5.4.10 Local I/O Bus Expansion

Since the IF260 module does not have its own expansion master, the EX350 I/O master controller is needed for local I/O bus expansion. By using this controller, up to four expansion racks with all I/O modules can be used with the IF260.

The I/O master controller is operated in the expansion slot of a PS465 power supply module. I/O modules on the main rack are handled by the CPU. The EX350 module supports the CPU by processing I/O module data on the expansion racks.

### 5.4.11 Axis Coupling over Multiple Modules

When coupling axes over multiple modules (gears, cams, CNC), the set positions of the master axes are sent to the NC154 modules with the slave axes in an interrupt routine running on the main CPU. The interrupt routine is not allowed to be stopped. These requirements are fulfilled by the following CPUs:

- CP260
- IF260 when it is used as a main CPU

### 5.4.12 Online Connection

- 1) The online connection is established through an insertable interface module with an RS232 interface.
- 2) The IF260 module can be programmed via CAN in the same way as every other B&R CPU.

One of the conditions required for programming using a CAN network is that an operating system must already have been installed. An RS232 connection is used to couple the programming system to a CPU module with a CAN interface. From here it is routed via CAN to the IF260 module.

- 3) When the programmable IF260 interface processor is used as the main CPU, the IF260 module can also be programmed by a peripheral processor through the backplane module. An XP152 module can be used as e.g. a peripheral processor.

This is also possible in the opposite direction. The IF260 can also be programmed via the main CPU when it is used as a peripheral processor.

One of the conditions required for programming using a backplane module is that an operating system must already have been installed. A PCCSW  $\geq$ V2.0 operating system must be installed on all processors.

- 4) Programming using the 3IF050.6 or 3IF060.6 interface modules is also possible. The connection is established using an RS232 or CAN interface. Programming can also be carried out using PROFIBUS-FMS. The NW150 PROFIBUS network module must have a revision number >14.04.

One of the conditions required for programming is that an operating system must already have been installed. A corresponding FBASE module must be programmed in the IF260 memory. System modules e.g. FBASE modules, can also be programmed in system Flash starting with PCCSW V2.0. Therefore the connection via an IF050/IF060 or a PROFIBUS network remains intact in diagnostics mode.

### 5.4.13 Programming System Flash

#### General Information

CPUs are delivered with a runtime system. The operating mode switch is set to switch position 0 at delivery i.e. the bootstrap loader mode is set.

A switch position must be set in order to boot the PLC in RUN mode (see Section 5.4.7 "Operating Mode Switch", on page 149). A runtime system update is only possible in RUN mode.

#### Runtime System Update when Operated as a Parallel Processor

The runtime system can be updated using the programming system. When updating the runtime system (runtime system update) the following procedure must be carried out:

- 1) A runtime system update is only possible using the CPU interfaces. This means that updating the runtime system must take place using a CPU interface (also applies to parallel processors).
- 2) An online runtime system update is only possible if the CPU processor and the parallel processor are in RUN mode. The RUN mode can be set with the operating mode switch.
- 3) Switch on the supply voltage.
- 4) Establish online connection (online cable) between the programming device (PC or Industrial PC) and the CPU. An online runtime update is possible using the serial RS232 interface.
- 5) Start B&R Automation Studio™.
- 6) Start the update procedure by calling the **Services** command from the **Project** menu. Select **Transfer Operating System...** from the menu shown. Follow the instructions from B&R Automation Studio™.

- 7) A dialog box is displayed for configuring the runtime system version. The runtime system version is already preselected by the user's project settings. Using the drop-down menu, the runtime system versions stored in the project can be selected. Clicking on the **Browse** button allows the selected runtime system version to be loaded from the hard drive or from the CD.

Pressing **Next** > opens a pop-up window, which allows the user to select whether the modules should be downloaded with SYSTEM ROM target memory using the following runtime system update. Otherwise, modules can also be downloaded using a later application download.

After pressing **Next** > a dialog box appears where the user can set the CAN baud rate, CAN ID and the CAN node number (the CAN node number set here is only relevant, if an interface module does not contain a CAN node number switch). Assigning a unique node number is especially important with online communication over a CAN network (INA2000 protocol).

- 8) The update procedure is started by pressing **Next** >. The update progress is shown in a message window.



**User Flash will be deleted.**

- 9) When the update procedure is complete, the online connection is automatically established again.
- 10) The PLC is now ready for use.

An operating system update is not only possible through an online connection, but also through a CAN network, serial network (INA2000 protocol) or an ETHERNET network, depending on the system configuration.