Honeywell C-Bus

Honeywell C-Bus communication protocol

Supported device types and versions

This protocol supports the communication with Honeywell devices based on the communication bus C-Bus.

It supports Honeywell devices, series EXCEL (XL20, XL50, 500,....).

Communication line configuration

We used ISA card KMFB02 (Incos a.s. Zilina) with firmware Ipesoft s.r.o. Zilina (stored in EPROM), which is a physical communication interface. The communication is executed on baud rate 4800 Bd, 9600 Bd or 19200 Bd. The card must have the driver KMFB02CB.SYS.

- Communication line category: **Honeywell C-Bus**.
- Line parameters (**C-Bus** tab).
- Device ID – is C-Bus Id which is assigned to KMFB02 card. It must be unused number in the range of 1 to 30, kept for KMFB02 in C-Bus network.
- Baud rate – is a baud rate of C-Bus. Supported baud rates: 4800, 9600 and 19200 Bd.

Communication station configuration

- Communication protocol: **Honeywell Excel C-Bus**
- Station address is C-Bus Id of device in the range of 1 to 30.
- You can execute an automatic synchronization of real time of EXCEL stations according to time of workstation. You must enable the synchronization and set "Synchronization period" of real time on tab "**Time parameters**" in configuration dialog box for station. The recommended period is 3 to 12 hours. First synchronization is done when starting D2000 KOM process.

Station protocol parameters

They influence a behavior of access to communication medium. You can define the following parameters:

Table 1

Key word	Full name	Meaning	Unit	Default value
WREXP	Write Request Expiration Timeout	Parameter defines a lifetime of request for writing a new value to I/O tag. If this entry can not be done (e.g. because the communication with station does not work), the request is cancelled after elapsing this time. An error message is written into the *line trace file*.	sec	60
IPT	Init Point Response Timeout	Timeout until which the device must respond after sending the request for initialization of communication with I/O tag into the device. After elapsing this time, error message is written into the *line trace file.*	sec	6
WPT	Write Point Response Timeout	Timeout until which the device must respond after sending the request for writing the new value of I/O tag into the device. After elapsing this time, error message is written into the *line trace file.*	sec	4
PRP	Parameter Read Periode	Read period of parameters from EXCEL devices. The changes in parameters (e.g. through EXCEL keyboard) are not transmitted automatically but they are read according to this period.	sec	600

String with protocol parameters is written according to this rule:

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Key_word=value;Key_word=value; ...
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Example:

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IPT=10;WREXP=90;
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If a key word with valid value has not been found in the initial string, default value is used according to Table 1.

I/O tag configuration

I/O tags: **Ai, Ao, Di, Do, Co, TxtI, TxtO**

- I/O tag address is name of I/O object that is defined in EXCEL device. It is a string of max. length 18 characters. The address can contain also the attributes.
- Reading and writing of values of EXCEL devices is done by I/O tags with the addresses:

  $.Px-y

  where *x* is a file number (0 to 127) and *y* is a parameter number (1 to 255) within a file. Example: $.P0-1 or $.P2-3

The reading/writing into time channels is done by I/O tags with these addresses:

Address	I /O tag	Meaning
$.TPRFSH	Dout	By writing the value FALSE into this I/O tag, the reading of all information about time programs is started. The reading is finished when I/O tag acquires TRUE.
$.TPLx	TxtI	I/O tag acquires the name of time program with index *x* (the index of first time program is 1). If this time program does not exist, I/O tag has an invalid value.
$.TPWSx-y	TxtI	Name of weekly schedule for time program with index *x* and day *y* (*y* in the range of 1 to 7 for Monday to Sunday).
$.TPDSx-y	TxtI	Name of daily schedule with index *y* for time program with index *x*. If daily schedule with this index does not exist, I/O tag has an invalid value.
$.TPPLx-y	TxtI	Name of permitted object for control with index *y* in time program with index *x*. If object with this index does not exist, I/O tag has an invalid value.
$. TPADSPx-y-z	TxtI	Name of object in an action with index *z*, daily schedule with index *y*, time program with index *x*. If this action does not exist, I/O tag has an invalid value.
$. TPADSTx-y-z	TxtI	Execution time of action with index *z*, daily schedule with index *y*, time program with index *x*. If this action does not exist, I/O tag has an invalid value.
$. TPADSVx-y-z	TxtI	Value assigned to object in the action with index *z*, daily schedule with index *y*, time program with index *x*. If this action does not exist, I/O tag has an invalid value.
$. TPWWSx-y	Co	Record of new daily schedule in weekly schedule. Day with index *y* (*y* in the range of 1 to 7 for Monday to Sunday), time program with index *x*. Recorded value is the index of dail schedule which was obtained by reading with the help of address $.TPDS.
$.TPWDSx-y	TxtO	Writing/cancellation of daily schedule with index *y* in time program *x*. The values: "DEL" - cancels daily program "NEW;Name" - creates new daily program with name "Name", value of index *y* is ignored
$. TPADSWx-y-z	TxtO	Writing/change/cancellation of action with index *z* in daily schedule with index *y*, time program with index *x*. The values: "DEL" - cancels the action. "NEW;HH:MM;ObjIndex;Value" - creates the action with time HH:MM, ObjIndex is the controlled object - i.e. index from a list which is obtained by $. TPPL address, and value Value. Index of action *z* is ignored. "SET;HH:MM;Value" - changes the existing action over to the new time HH:MM or Value.

Note to the reading and controlling the time programs:

To obtain the complex information about time programs by the static measurements is virtually impossible because of their large quantity. Therefore there is enabled a dynamic change of address to read and write the time programs by Tell command SETPTADDR in all I/O tags. In combination of the active pictures, you can implement a full displaying and controlling the time programs. We created a sample template of D2000 configuration database.

- I/O tags that have not any image in EXCEL device:

Address	I/O tag	Meaning
$.ALARM	TxtI	Text variable that contains the last received alarm from device (parent of I/O tag – station).
$.LIST	TxtI	Text variable that contains the list of objects received from device (parent of I/O tag – station).

- I/O tags with Manual/Auto status:

  You can obtain or modify the status M/A when you configure I/O tags Di, Dout with address which contains the attribute - string ".MAN". True means that the object is in Manual status, False - the object is in Auto status. The both I/O tags must be defined so that this object could work properly. E.g. I/O tag with address "Tepl_v_Miestnosti_01" and another one with address "Tepl_v_Miestnosti_01.MAN". The change of I/O tag with ".MAN" attribute means the change Manual/Auto status of object in the device.

- Change of Manual/Auto status by A flag of object value:

Manual/Auto status can be gotten or modified also by the setting of A flag in object value. The object with ".MAN" attribute is not necessary. If A flag is set, the object is in Auto status. If it is not set, the object is in Manual status.

Installing of driver KMFB02CB

Windows NT 4.0 operating system

When installing the driver of KMFB02 card, follow these steps:

1. Copy **KMFB02CB.SYS** file into the directory **\WINNT\SYSTEM32\DRIVERS** on the disc with Windows NT operating system.
2. Import the "registers" from **KMFB02CB.REG** file by the system utility **regedit**. Click on **Start** button, **Run...**, write **regedit** and press **ENTER**. In the menu of **regedit** utility click on **Registry** and **Import registry file...**". Select **KMFB02CB.REG** file.
3. Restart your computer.

Windows 2000 operation system

For installation of driver you need these files:
kmfb02cb.inf - installation file
kmfb02cb.sys - own driver

Installation procedure:

1. Log on to MS Windows 2000 as Administrator with the administrator rights.
2. Click on **START** button -> **Settings** and **Control panel**.
3. Start **Add/Remove Hardware** wizard.
4. Click on **Next** button until Win2000 finishes searching the hardware.
5. Choose **Add a new device** and click on **Next.**
6. Choose **No, I want to select the hardware from a list** and click on **Next.**
7. Choose **Other devices** and click on **Next.**
8. Click on button **Have a disk.**
9. Find **kmfb02cb.inf** file after clicking on **Browse...**
10. Confirm the restart of computer.

Note: KMFB-02 card uses the INT 5 interruption, therefore it must be released if it is reserved (it is used only for the parallel port LPT2 or network LAN card) this interruption is not usually used).

Literature

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Changes and modifications

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Document revisions

- Ver. 1.0 – July 24, 2000 – Creation of document
- Ver. 1.1 - April 24, 2001 - Reading/writing of parameters and writing of real time
- Ver. 1.2 - July 13, 2001 - Time programs

Related pages:

Communication protocols