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МОДУЛИ ДЛЯ ПЕРЕДАЧИ ДАННЫХ

Технические характеристики

Excel 500/600



Excel 500/600 CONTROL SYSTEM

HONEYWELL EXCEL 5000 OPEN SYSTEM

SPECIFICATION DATA



FEATURES

- **Various state-of-the-art communication options:** Open LONWORKS® bus (Excel 500, only) or C-bus (Excel 500/600) communication; modem or ISDN terminal adapter at up to 38.4 Kbaud (Excel 500, only)
- **Maximum of 5 housings per Excel 500/600 control system with up to 16 I/O modules**
- **128 physical data points and 256 pseudo points per Excel 500/600 controller (C-bus communication)**
- **Use with both internal, plug-in I/O modules, and Distributed I/O modules via LONWORKS bus (Excel 500, only)**
- **Unique features in open LONWORKS networks:** NV-Booster® reduces the number of required NVs and thus also the number of required controllers; NV bindings can be restored after controller reset (and thus need not be redone after exchanging controllers); 512 NVs supported for LONWORKS integration; autobinding with Honeywell Distributed I/O modules, Smart I/O modules and 3rd party LonWorks® devices makes NV binding unnecessary, thus saving considerable engineering time
- **Easy-to-use controls and six-line LCD display**
- **Front door or control panel mounting with DIN-rail**
- **Applications programmable with Honeywell's CARE programming tool and downloadable into Flash EPROM (Excel 500, only)**
- **Enhanced controller functions including:** alarm, trend and global broadcast hysteresis, network-wide time synchronization, firmware downloading via modem and C-Bus

GENERAL

The Excel 500/600 is a freely programmable control and monitoring system specifically designed for building management. Using the latest Direct Digital Control (DDC) technology, the modular design of the Excel 500/600 is particularly well suited for use in medium-sized buildings such as schools, hotels, offices, shopping centers, and hospitals.

In addition to control applications for heating, ventilation, and air conditioning (HVAC), the Excel 500/600 also performs a wide range of energy management functions, including optimum start/stop, night purge, and maximum load demand. Up to four Building Supervisors can be connected via the system bus.

The Excel 500 controller has a LONWORKS® bus interface, allowing interoperability with a wide range of Honeywell and third-party controllers and devices. Up to 512 LONWORKS network variables can be mapped to data points.

A modem or ISDN terminal adapter can be connected to the Excel 500 for communication via the public telephone network.

The modular design enables the system to be expanded to meet growing needs. The data point user addresses and plain language descriptors are stored in the controller and are therefore available for viewing locally at an external interface without the need of a central PC.

Table 1. Modules for the Excel 500/600 System

| modules | description |
|------------|--|
| XC5010C | Computer module Excel 500 (required for Distributed I/O); UL916 and UL864-approved |
| XC5210C | Large RAM version of Excel 500 |
| XC6010 | Computer module Excel 600 |
| XP502 | Power supply module |
| XD505A/508 | communication submodules (XL600, only) |
| XF521A/526 | Analog input modules |
| XF522A/527 | Analog output modules |
| XF523A | Digital input modules |
| XF524A/529 | Digital output modules |
| XF525A | Three-position output module |

DESCRIPTION

The Excel 500/600 System is part of the EXCEL 5000 family of controllers. The Excel 500/600 System is freely programmable and can be used as a stand-alone controller or as part of a network of up to 30 controllers connected via a C-bus (9.6 Kbaud up to 76.8 Kbaud). The Excel 500/600 System provides energy management and control functions via internal plug-in I/O modules in the unit housing as well as via a 2-wire LONWORKS bus interface (Excel 500, only) to Honeywell Distributed I/O modules or Smart I/O modules.

The Excel 500/600 housing has four slots for plug-in modules (see Table 1). The primary unit consists of a CPU module (Excel 500 uses XC5010C, Excel 600 uses XC6010 for special high-performance requirements), a power supply module (XP502), and two additional I/O modules. Up to four more Excel 500/600 housings (without CPU and Power Supply module) can be connected in series providing slots for additional modules. An Excel 500/600 System can consist of up to 16 I/O modules (total number of plug-in and Distributed

I/O modules (Excel 500, only)) with up to 128 inputs and outputs. A maximum of ten modules of the same type are allowed per system. In addition, the Excel 500 can communicate with any LONWORKS product. Up to 512 LONWORKS NVs can be mapped to data point.

There are two sources for Excel 500/600 program applications:

1. The controller is shipped with a wide range of standard functions permanently stored in EPROM. By selecting applications from these applications, the user program is assembled. No further programming is necessary.
2. Using Honeywell's Windows-based CARE programming tool, standard HVAC technology applications can be freely programmed, as needed.
3. The user program is then automatically generated based on the graphically designed schematic diagram, instrumentation, and control strategies.

SPECIFICATIONS

Electrical

Operating voltage

24 Vac, $\pm 20\%$

Power consumption

max. 40 VA (max. 30 W)

Memory buffer

XC5010C: gold capacitor buffer for 72 hours

XC6010: Lithium battery 3 V, (e.g. Varta CR ½ AA-3V)

RAM buffer for approx. 1 month.

Application security on power failure

Complete backup of total system for 15 min., UPS.

Optional XAPU 24-2F.

Overvoltage protection

All inputs and outputs are protected against 24 Vac and 40 Vdc overvoltage as well as short-circuiting.

Environmental

Ambient temperature

Operation: +32...+122°F (0...50°C)

Storage: -4...+158°F (-20...+70°C)

Ambient humidity (operation and storage)

5 to 93% r.h. noncondensing

Mechanical

Housing dimensions (H x W x D)

5-5/8 x 7-1/2 x 7-3/8 i

(144 x 192 x 188 mm)

Housing material

Plastic, flame-retardant

Mounting methods

Panel (with DIN-rail) or front door

Calculated lifetime of weakest components

MTBF ≥ 60 years (for typical Excel 500 applications)

Protection class

IP 30

Communication

C-B

The C-bus transmits data between the EXCEL 5000® System controllers, devices, and building supervisors at 9.6 Kbaud up to 76.8 Kbaud. The maximum C-bus network length is 1,200 m (3,900 ft) or 15,700 ft. (4,800 m) using the XD507 repeater.

There is a maximum number of 30 controllers or devices allowed per C-bus. See Excel 100/500/600 Installation Instructions (EN1R-1047GE51) for wiring details.

LonWorks Bus (Excel 500, only)

The Excel 500 uses an FTT-10A Free Topology Transceiver, transmitting data at 78 Kbaud using LonTalk® protocol.

Cable length from 1,050 to 7,200 ft. (320 to 2,200 m). See Excel 100/500/600 Installation Instructions (EN1R-1047GE51) for wiring details.

Modem (Excel 500, only)

A modem or ISDN terminal adapter can be connected to the serial port for dial-up access at a transmission rate of up to 38.4 Kbaud.

INTERNAL MODULES

Computer Module XC5010C / XC5210C



- Toshiba TMP93CS41F 16-bit microprocessor
- 1.28 MB total memory; 2x512 KB Flash EPROM for operating system and applications; 2x128 KB RAM
XC5210C, only: 1x128 KB plus 1x512 KB RAM
- Six operating status LEDs
- RS 232 port for MMI, modem or ISDN terminal adapter.
- RS 485 port for C-bus
- Coding pin (pin 8)
- Gold capacitor for data buffer
- Reset button
- Watchdog function
- Neuron[®] chip 3120
- LONWORKS service button and LED
- Firmware download

Computer Module XC6010



- Intel[®] i960 32-bit microprocessor
- 1.536 MB total memory
2x512 KB EPROM
4x128 KB RAM
1x256 KB Flash EPROM
- Six operating status LEDs
- RS 232 port for attachment of operator interface
- RS port for C-bus
- Coding pin (pin 8)
- Buffer battery providing 30-day data
- Reset button
- Watchdog function

Power Supply Module XP502



- Provides low voltage to modules via internal bus
- Can be connected to UPS device XAPU 24-2F
- Three operating status LEDs
- Coding pin (pin 6)
- Watchdog function

Analog Input Module XF521A/526



- Eight analog inputs (AI1 - AI8)
0...10 Vdc
0...20 mA (via external 500-ohm resistor)
4...20 mA (via external 500-ohm resistor)
NTC 20k ohm and PT 1000 (-50°C to +150°C) **XF526, only:**
PT 1000 (0°C to +400°C), PT 3000, PT 100, Balco 500
- Protected inputs up to 40 Vdc / 24 Vac
- 12-bit resolution
- 1 sec (XC5010C) or 250 ms (XC6010) CPU polling time
- Coding pin (pin 7)

Analog Output Module XF522A/527



- Eight outputs (AO1 - AO8), short-circuit proof
- Signal levels 0...10 Vdc
U_{max.} = 11 Vdc,
I_{max.} = +1 mA, -1 mA
- Protected outputs up to 40 Vdc / 24 Vac
- 8-bit resolution
- Zero point < 200 mV
- Accuracy $\leq \pm 150$ mV deviation from output voltage
- One red LED per channel
light intensity proportional to output voltage
- Control updating every 1 sec (XC5010C) or 250 ms (XC6010) with CPU
- **XF522A, only:** manual override controls for five outputs

Digital Input Module XF523A



- Twelve inputs (DI1 - DI12), R_i = 15k ohm

| | | |
|---------------------|---------|----------|
| inputs | 1 - 2 | 3 - 12 |
| max. freq. | 15 Hz | 0.4 Hz |
| min. pulse duration | 20 msec | 1.25 sec |
| min. pulse pause | 33 msec | 1.25 sec |
| max bounce time | 5 msec | 50 msec |
- Switching conditions: OFF: U_i \leq 2.5 V, ON: U_i \geq 5 V
- Protected switching up to 40 Vdc / 24 Vac
- Coding pin (pin 9)
- One status LED per channel, invertible (NO/NC)
- 18 Vdc auxiliary voltage supply (unregulated)
- 1 sec (XC5010C) or 250 ms (XC6010) CPU polling time

Digital Output Module XF524A/529



- Five isolated change-over contacts and 1 NO contact
- Max. voltage U_{max.} = 240 Vac per output
- Max. current I_{max.} = 4 A per output
- 12-A total current per module
- Coding pin (pin 10)
- LED per channel
OFF: LED off
ON: LED illuminated (yellow)
- Cycle time 1 sec (XC5010C) or 250 ms (XC6010) with CPU
- **XF524A, only:** manual override switches for 5 outputs

Three Position Output Module XF525A



- Three three-position relays
- Max. load
1.2 A at 24 Vac
0.2 A at 240 Vac
- Coding pin (pin 12)
- Two LEDs per channel with manual override switches:
 - L1 (green): servo motor closes
 - L2 (red): servo motor opens
 - L3 (green): servo motor closes
 - L4 (red): servo motor opens
 - L5 (green): servo motor closes
 - L6 (red): servo motor opens
- Cycle time 1 sec (XC5010C) or 250 ms (XC6010) with CPU

Module Locations

Each Excel 500/600 housing has four module slots numbered 1 through 4 from left to right. Table 2 indicates the possible slot positions for each module.

Table 2. Slot positions for the various Excel 500/600 modules

| module | | slot position |
|--------------------------|------------------------|---------------------------------|
| Computer module | XC5010C/XC5210C/XC6010 | first Excel 500 housing, slot 4 |
| Power Supply module | XP502 | first Excel 500 housing, slot 1 |
| Analog Input module | XF521A/526 | slot |
| Analog Output module | XF522A/527 | slot |
| Digital input module | XF523A | any slot |
| Digital Output module | XF524A/529 | not in first Excel 500 housing |
| 3-Position Output module | XF525A | not in first Excel 500 housing |

NOTE: Also see the Distributed I/O Product Data sheet, EN0B-0090GE51.

OPERATOR INTERFACE XI581/XI582



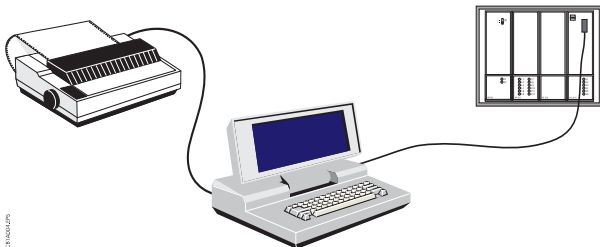
XI581

XI582

The XI581 or XI582 operator interface is the command and information center of the Excel 500/600 system. With them, data can be entered and displayed. Information such as current temperature values, control status, etc. can also be displayed. The menu-driven, six-line, backlit LCD graphic display with 34 characters per line, together with eight clearly marked keys, makes the device easy to use.

The operator interface is connected to the serial port at the front of the computer module. The XI582 unit can be mounted on the front cover or up to 48 ft. (15 m) away from the controller. A blank cover is also available.

OPERATOR AND SERVICE SOFTWARE XL-ONLINE



Excel 500/600 with XL-Online and printer

The PC-based XL-Online is the local intelligent operating and service software. It performs all the operating functions of the XI581/XI582 as well as having the advantages of a PC. Not only can the XL-Online make major modifications such as changing setpoint values and time program switching points, it also offers all service and commissioning functions.

The XL-Online can be operated at five different access levels, three of which are password protected. A printer can be connected to the parallel interface of the XL-Online to log alarms and error messages. As with the XI582, the PC with the XL-Online operator and service software can be placed up to 15 meters from the computer module.

PROGRAMMING

The Excel 500 system includes a comprehensive software package specially designed to meet the requirements of application engineers. The easy-to-use, menu-driven software features the following functions:

- data point description
- time program
- alarm handling
- application program (DDC program)
- password protection

Data Point Description

Data points are the basis of the Excel 500 system. They contain system-specific information such as values, status, limit values, and default settings. The user has easy access to data points and the information they contain. The user can recall and modify information in the data points.

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