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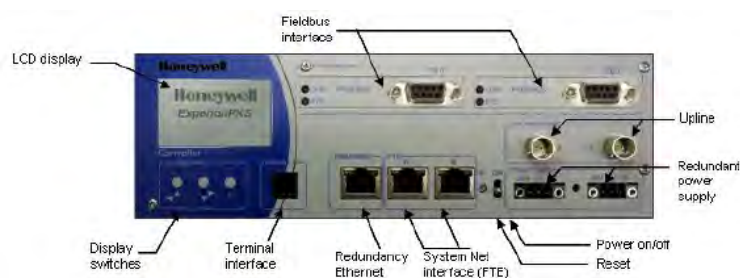
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КОНТРОЛЛЕРЫ

Технические характеристики на РМД



FCE (PMD) Controller

Honeywell's FCE (PMD) Controller is used in process, machinery and drives (PMD) technology to control fieldbus-based processes and process equipment. It has all the features required for controlling continuous and batch processes, machines and standalone and coordinated line drives. Its control tools support the conventional controls and logic, plus the advanced control methods such as fuzzy logic, neural net, optimization, multivariable controls and statistical process control.

The FCE Controller includes two Profibus fieldbus interfaces that support the Profibus standard EN50170 and interface DP/VO, V1, V2, Class 1 and 2 Master. It has a multi-speed UPLINE/IOLINE highway interface that allows the TotalPlant Alcont rack-based I/O (IOLINE) and the XPR-A based process modules (UPLINE) to be connected to the system. The FCE Controller connects to the automation system's network through an Ethernet interface. It includes a control application execution environment for direct control of the process and any fieldbus-resident devices beyond the fieldbus.

The FCE Controller's control functions and fieldbus interfaces, and the functions of fieldbus-connected devices, are defined with the Experion PKS with PMD controller automation system's standard definition tools. Consequently, data is displayed in an identical form by the application, regardless of the device and the fieldbus in use.

Due to its high capacity, fieldbus interfaces and functions, the FCE Controller meets the diverse control needs of various industries, offering:

- Ready-made solutions for flexibility and convenience
- Integrated tools to manage applications and system and field device definitions
- Centralized fieldbus maintenance and alarm and diagnostics management

- Profibus fieldbuses that can be easily extended and distributed

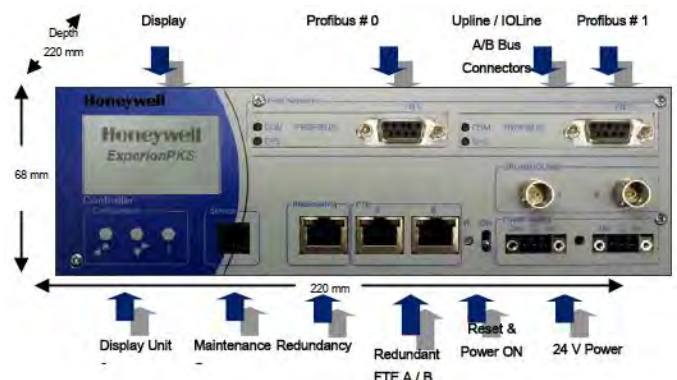
Features

High Control Capacity

Up to 750 devices with I/O data, in total, can be connected to one FCE Controller through Profibus fieldbuses, I/O Web Link devices and the IOLINE highway. One FCE Controller can control as many as 7,000 I/O channels. The maximum number of devices connected to each bus depends on the capacity of the bus. Since the FCE Controller also includes the control application execution environment, the control response times are very short, resulting in high control capacity. The controller functions as the host for the integrated fieldbus, supervising the fieldbus functions.

Embedded Fieldbus Data

The data generated by and relayed from a FCE Controller-Profibus or I/O Web Link-connected fieldbus will be available in the automation system in the same way as any other system data. The fieldbus data is defined by the automation system's fieldbus definition tool (PMD Builder) showing the fieldbus I/O data as standard I/O data items in the application's I/O pins. Separate display programming is not required. The diagnostic and alarm data are displayed in the control room as system alarms and application alarms on the user interface and as fieldbus-specific data management displays and diagnostic displays.



Honeywell's Experion Process Knowledge System's device support blocks facilitate the matching of fieldbus data with the automation system application. The interface is modified by the device support blocks in such a manner that the various manufacturers' devices controlling the same function can be connected to the application without modifications. Device support blocks are available for a wide range of devices. Each manufacturer's device requires a specific support block.

Fieldbus Interface Configuration

The automation system's fieldbus interface configuration or the setting of the fieldbus interface parameters (defining the fieldbus addresses and the transferable data) takes place using the fieldbus definition software. This software package is located in the Experion system's Design Module and integrated as part of the module's application tools.

Design Modules are provided with a direct interface to the automation system's network. This interface enables fieldbus management in such a manner that all the fieldbus interfaces of any single system department can be configured, diagnosed and monitored through a single workstation over the system's network, without having to separately connect the workstation to each of the fieldbus channels involved.

Users can define and test fieldbus system configuration even during the automation project's definition stage by means of the fieldbus software. The defined fieldbus I/O data can be easily linked to the Experion system definitions. The combination of the data forms and information entity will be used automatically at a later stage to match the fieldbus I/O data items with the application in the application execution environment. In other words, the fieldbus I/O data will be embedded in the system's normal I/O world without specific awareness of a fieldbus being present.

Maintaining and Diagnosing Fieldbus

In addition to the normal I/O channel data, the FCE Controller produces channel-specific diagnostic and status data pertaining to each I/O unit connected to it. The collection of I/O channel-specific diagnostic and status data enables accurate observation of field device faults and the location of process malfunctions. These diagnostic and status data items can be automatically used by the automation system applications.

In addition, the automation system's user interface features a diagnostic display which displays the diagnostic data in the

same way as any other system control variables or process values. This function enables the monitoring and diagnosis of a single device without the use of fieldbus-specific tools.

Any alarm data generated by the fieldbus interface and the devices connected to the system through the fieldbus will also be automatically routed to the automation system's alarm system. The alarm system will present the alarms in displays just like any other system alarms. Any alarms created by the interface and the fieldbus devices will also be available to the supervising automation application, in addition to the measurement status data.

Construction and Functions

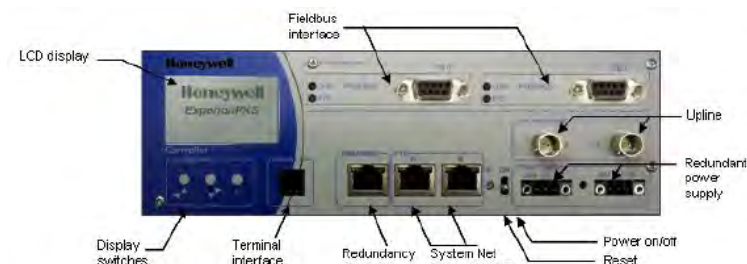
Processor unit

The heart of the processor unit is a 32-bit 1,06 GHz Celeron processor or equivalent. Excellent processor performance is ensured by a module-supported direct 64-bit RAM memory interface with a clock frequency of 533 MHz. The COM Express module also supports the PCI express bus, to which the Ethernet chips are connected.

Rugged Industrial Housing

- The FCE controller meets demanding process industry needs:
 - Tolerates corrosive gases and dust
 - Tolerates wide temperature range
- A compact steel box with cooling fins at the back side of the controller eliminates the need for a fan
- Resistance to vibration and shock
- Conformance with EMC regulations
- Embedded systems circuitry inside

FCE Controller front panel interfaces and switches.



System Net interface

The FCE Controller connects to the System Net through the Ethernet interface (FTE). The Ethernet mode (full or half-

duplex) and speed 10/100/1000 Mbit/s can be selected automatically or manually through the display menu for all three Ethernet connections.

System Net Cabling

There are two RJ45 connectors on the FCE Controller's front plate for the Ethernet connection. The A connector is used for the System Net's A side connection and B connector for the B side connection. In a non redundant network the connection can be either A or B.

Terminal Interface

The FCE Controller is provided with a terminal interface for maintenance and software development needs. The terminal interface is a passive galvanically isolated current loop interface.

Power Supply

Feeding power is fed through the 3-pin screw-locked connector. When using a non-redundant power supply power feeding can be connected to either one of the connectors.

Reset

By using the reset button, you can boot the FCE Controller in two different ways:

- Pressing the reset button longer than 1 second but less than 4 seconds, the FCE Controller will "warm boot", then only the FCE Controller's operating system restarts. The memory content will not be erased.
- Pressing the reset button longer than 4 seconds, the FCE Controller cold boots erasing the memory content.

Power on/off

FCE Controller has a separate power switch located beside the power supply connectors.

FCE Controller Redundancy Interface

The FCE Controller redundancy is implemented with the Redundancy Ethernet interface.

CompactFlash and Upline interface

CompactFlash Interface

FCE Controller's system software is saved into the CompactFlash memory sized a minimum of 1 GB. If necessary, the CompactFlash memory card can be replaced from the front of the device by removing first the front cover.

Upline/I/Oline Interface

The controller features a multi-speed Upline/I/Oline highway interface. It can be used to connect TotalPlant Alcont I/O extension racks (I/Oline highway) and TotalPlant Alcont XPR-A-based process modules (Upline highway). The highway data transmission rate can be selected as 1 Mbit/s, 2 Mbit/s or 4 Mbit/s.

Profibus Interfaces

Both Profibus interfaces have their own processor for data transmission. The COM Express processor communicates with the processors by using a dual port memory.

Display

FCE Controller is provided with a 128x164 sized LCD display to indicate various card states. The display is a black and white model based on the FSTN techniques and equipped with a LED background light. The display response time is 150 ms.



Installation

Installing the FCE Controller in the Mounting Shelf

In the mounting shelf assembly the FCE Controller is assembled in a metal enclosure (houses two FCE controllers) which in turn is furnished in a 19" rack. The metal enclosure is provided with the sliding side bars for the FCE controller attachment.



The mounting shelf goes inside the PMD Controller cabinet. There is room for 10 FCE Controller shelves per PMD controller cabinet, therefore a maximum of 20 FCE controllers per cabinet.



The FCE Controller mounting shelf is 19" wide and 2U high. One mounting shelf accommodates two FCE Controllers side by side.

The process interfaces are connected to the FCE Controller through fieldbuses and UPLine/IOline (TPA rack-I/O). All interfaces are connected through the connectors located on the controller's front panel.

The FCE Controller Process Interface Options

The following process interface options are provided for the non-redundant FCE Controller.

	Non-redundant FCE Controller and Profibus	Non-redundant FCE Controller and IOC interface (non-redundant or redundant) for TPA I/O extension racks	Non-redundant FCE Controller and non-redundant XPR-A-based process modules
Controlling processor	FCE Controller: processor unit	FCE Controller: processor unit	FCE Controller: processor unit Process module: XPR-A/FST
Fieldbus interfaces	Profibus FCE Controller: 2 Profibus interfaces	Profibus FCE Controller: 2 Profibus interfaces	Profibus FCE Controller: 2 Profibus interfaces
Highway interface		IOLINE FCE Controller: Upline/IOLINE interface I/O extension rack: IOC/FST/N	UPLINE FCE Controller: Upline/IOLINE interface Process module: XPR-A/FST
Power supply	FCE Controller: external 24 V Field devices: external 24 V	FCE Controller: external 24 V Field devices: external 24 V I/O extension rack: IOPS	FCE Controller: external 24 V Field devices: external 24 V Process module: LPS-A or MPS
Process interface devices /cards	FCE Controller: supported devices for Profibus	FCE Controller: supported devices for Profibus I/O extension rack: All TPA process interface cards	FCE Controller: supported devices for Profibus Process module: All TPA process interface cards, limited functionality for PFI and SCI cards

The following process interface options are provided for the redundant FCE Controller.

	Redundant FCE Controller and fieldbuses	Redundant FCE Controller and IOC interface (non-redundant or redundant) for TPA I/O extension racks
Controlling processor	FCE Controller: processor unit	FCE Controller: processor unit
Fieldbus interfaces	Profibus FCE Controller: 2 Profibus interfaces	Profibus FCE Controller: 2 Profibus interfaces
Highway interface		IOLINE FCE Controller: UPLINE/ IOLINE interface I/O extension rack: IOC/ FST/N
Power supply	FCE Controller: external 24 V Field devices: external 24 V	FCE Controller: external 24 V Field devices: external 24 V I/O extension rack: IOPS
Process interface devices /cards	FCE Controller: supported devices for Profibus	FCE Controller: supported devices for Profibus I/O extension rack: All TPA process interface cards supported

FCE Controller Specification

General

Environmental classification:	G2 for air impurities (gas, corrosion) IEC 60721-3-3 class IE33 requirements where applicable. Please refer to the document <i>Automation System Environmental Conditions</i> (class ENV-2).in the <i>Technical Manual</i> .
IP rating	IP43
Operating ambient temperature	+5...+40°C
Operating voltage	24 V +/- 10%
Heat dissipation	< 36 W
Dimensions:	
Shelf-mounting controller W x H x D	220 mm x 68 mm x 220 mm
Function display	128x64 pixel LCD

Standards and approvals

EMC	EN61000-6-2 :2005 (immunity) EN61000-6-4 :2007 (emissions)
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Processor unit

Processor	Intel Celeron 1,06GHz or similar
RAM memory Application	512 Mega bytes
memory space Nonvolatile	16 Mega bytes
read memory Calendar	CompactFlash memory card >1GB
clock accuracy LCD	0.5 s / day
display	128x64 pixel graphics LCD, FSTN technique, led background light
push buttons	Three push buttons under the display for controlling the display menus

Interface unit

System Net interface	Ethernet interfaces FTE A, FTE B
Communication rate	10/100/1000 Mbit/s
Interfaces	2 pcs, RJ45 10/100/1000Base-TX (IEEE802.3)
Indicator lights	
Green	The green light flashes in phase with the message communication.
Yellow	When the yellow light is on, the bus communication rate is 1000 Mbit/s
Redundancy interface	Ethernet interface Redundancy
Interface	10/100/1000 Mbit/s 1 pcs RJ45 10/100/1000Base-TX (IEEE 802.3)
UPLINE interface Data	
transmission rate Cable	1 Mbit/s, 2 Mbit/s, 4 Mbit/s
matching	High-impedance reception, transmission 75 Ω, reflection attenuation above 20 dB
Cable interface Maximum	BNC connectors
highway length	Depends on data transmission rate and number of connected modules. See the document <i>Upline/IOLINE highway</i> .
Profibus Interfaces	PB
Number of interfaces	Max. 2
Connectors	9-pin D-connector, female
Fieldbus changeability	Profibus interfaces can be changed by removing the front panel
PROFIBUS comm. standards	RS485 and EN 50170

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