System 800xA’s AC 870P controller can be extended with AC 870P local I/O.

A large variety of I/O modules can be combined to form an optimal solution for a specific application.

The interoperability of the AC 870P Controller and the Local I/O modules is realized via a high speed, redundant serial field network (Fnet). An I/O module processes any inputs from and outputs to field devices and transfers these signals to the AC 870P with a time stamped resolution of 1ms. The I/O modules are powered by a modular power supply, which can also be provided redundantly.

The following I/O types are available:

- Analog input (CAI)
- Temperature input (CTI)
- Analog output (CAO)
- Digital input (CBI)
- Digital output (CBO)
- Controller output/Individual drive output (CAC/CBC)
- Frequency input (CFI)
- Serial communication interfaces (CCF)
AC 870P Local I/O Features

- A processor in each I/O module provides advanced functions like event detection and alarm generation, time stamping with 1 ms resolution and system diagnostics.
- PROM changes are no longer required because of downloadable firmware.
- AC 870P local I/O modules provide integrated transmitter supply, integrated intrinsic safety, and HART communication.
- Process signals are connected to the front panel of the I/O modules which leads to efficient packaging.
- Distribution of I/O modules reduces cable and installation costs. A high speed serial communication bus (Fnet) designed for long distances combined with flexible Din-Rail, 19” universal cabinet as well as Melody modules Cabinet based mounting options enables both centralized and remote I/O locations.
- Simplified user configuration with no calibration required and no jumper on-board to set.
- The I/O modules are fully compatible with the existing Melody System.
- Inherent redundancy design provides redundant communications via Fnet and optionally redundant I/O modules provide the highest level of availability.
- Reduction in total operating cost. Simple user configuration without any calibration. Online replacement of modules without disrupting the process, in case of redundancy.
### Basic Specification

| Power supply (all consuming modules) | +24 V DC (+20...+33 V DC) via power supply modules Details see "AC870P/Melody System Data and Handling (2PAA101137)"
|---|---

### Climatic conditioning AC 870P housing and modules

| Permissible ambient temperature | 0 ... 50° C Permissible module Intake temperature -30...85° C Transportation/storage
|---|---

| Permissible relative air humidity | Yearly average 75 %; with no condensation in operation approx. 95 % condensation permissible in transportation/storage
|---|---

| Climatic class | 3K3 to DIN EN 60 721 part 3-3 KSF to DIN 40 040 (of 04.87)
|---|---

| Intrinsic safety | Class 1, div. 2
|---|---

### Communication Media-Fnet

**Serial lines with coaxial/fiber optic cable via repeater**

| Redundant | 2 lines (A and B)
|---|---

| Adressable stations | 126 single modules or 126 redundancy pairs
|---|---

| Connectable number of stations | 2 masters (as redundancy pair) + 44 slaves + 1 repeater (per bus line)
|---|---

### Repeater CCR 70-P

**Repeaters equipped with the corresponding interface modules are suitable for the following applications**

| Increasing the number of subscribers and extending the transmission paths | Point to point connections (optical) up to 2000 m (electrical) up to 500 m Y-branching (electrical) Optical star with 4 optical fibres per module Bus connection between several cabinets (electrical) up to 200 m
|---|---

### Layout of modules

**Peripheral modules in standard versions and intrinsically safe versions (Ex and Non-Ex)**

| Dimensions | Height 7 height units → 311,15 mm Width 8 module width units → 40,64 mm Depth 160 mm
|---|---

| Connection technique | on front via 4 (3) termination units with cage clamp springs
|---|---

| System connector on rear | C64 (to DIN 41612)
|---|---

| Operation/fault indication | by LED on front panel
|---|---

| Individual fusing | T3.15H on front panel
|---|---

### Termination Units for Field Cable

**Different termination units are available depending on the application**

| Termination unit | CI 100 for simply configured modules (gray) CI 101 for redundantly configured modules (gray) with 8 DU CI 102 for redundantly configured modules (gray) with 16 DU CI 120 Ex for simply configured Ex modules (blue) CI 121 Ex for redundantly configured Ex modules (blue) CI 122-2 Ex with integrated current limiting for redundantly configured Ex modules (blue)
|---|---

### AC 870P Local I/O Modules (all modules with redundancy capability)

**Digital input modules**

| Digital input modules | CBI 20-P 32 Inputs, 48/24/8.2 V, Standard-Binary Signals-Contact Scanning (Changer/Opener/Closer), Initiators (Namur, 3-/4-Wire), Isolation per module, Transmitter Power Supply
|---|---

| Digital input modules | CBI 21-P Ex 32 Inputs, [EEx ib] IIC, Namur-ATEX 100 compliant, Isolation per module, Transmitter Power Supply
|---|---

| Digital input modules | CBI 22-P Ex 32 Inputs 16V, [EEx ib] IIC, TEX 100 compliant, Contact Scanning (Changer/Opener/Closer), Isolation per module, Transmitter Power Supply
|---|---

**Digital output modules**

| Digital output modules | CBO 10-P 24 Outputs, 10...60V AC/DC, 1 A, Potential-free Contacts, Transmitter Power Supply, Safety Support external
|---|---

| Digital output modules | CBO 22-P 32 Outputs, 24V, Electronic Outputs - Power Supply and Fusing, internal 55 mA/110 mA/220 mA, external 250 mA/500 mA/1,000 mA
|---|---

**Frequency input modules**

| Frequency input modules | CFI 10-P 4 channels, 0.15Hz ...50 kHz frequency or 20 µs ... 6 s period measurement, galvanic isolation per channel, Transmitter supply, Initiators (Namur, 3-Wire), Contact Scanning, Outputs with int/ext Supply, Dosing circuit, Frequency input
|---|---
## AC 870P Local I/O Modules (all modules with redundancy capability)

<table>
<thead>
<tr>
<th>Input modules</th>
<th>CAI 10-P</th>
<th>CAI 20-P</th>
<th>CAI 10-2-P Ex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inputs</td>
<td>16</td>
<td>32</td>
<td>12</td>
</tr>
<tr>
<td>Range</td>
<td>0/4..20 mA</td>
<td>0/4..20 mA</td>
<td>4..20 mA</td>
</tr>
<tr>
<td>HART</td>
<td>per Channel</td>
<td>per Channel</td>
<td>IIC</td>
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<tr>
<td>Isolation per Channel</td>
<td></td>
<td></td>
<td>ATEX 100 compliant</td>
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<tr>
<td>Transmitter Power Supply</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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<tr>
<th>Output modules</th>
<th>CAO 10-P</th>
<th>CAO 10-2-P Ex</th>
</tr>
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<tbody>
<tr>
<td>Outputs</td>
<td>16</td>
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</tr>
<tr>
<td>Range</td>
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<tr>
<td>Isolation per Channel</td>
<td></td>
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</tbody>
</table>

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<thead>
<tr>
<th>Temperature input module</th>
<th>CTI 21-P</th>
<th>CTI 21-P Ex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inputs</td>
<td>16/32</td>
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</tr>
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</tr>
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<td>per Channel</td>
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<tr>
<td>Isolation per Channel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thermo Couples</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mV/V-Signals</td>
<td></td>
<td></td>
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<tr>
<td>Resistance</td>
<td></td>
<td></td>
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</tbody>
</table>

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<thead>
<tr>
<th>Control module</th>
<th>CAC 10-P</th>
<th>CBC 11-P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed Loop Control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Channels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transmitter Power Supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coupling Relay Control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection of Servo Drives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actuators and Pneumatics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PI-Step Control</td>
<td></td>
<td></td>
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<tr>
<td>Three-Point-Positioner</td>
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