Honeywell
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ControlEdge RTU Process Controller

Product Information Note

ControlEdge™ RTUs are powerful, modular and scalable controllers capable of all remote automation and control applications. They provide improved management of field assets through simplified and efficient remote monitoring, diagnostics, and management. Reduce equipment monitoring and diagnostics from hours to minutes. Experion® SCADA configuration time is reduced by 80%.

With Honeywell's ControlEdge RTU process controller, users have an edge into realizing the best utilization of their distributed assets through efficient remote monitoring, diagnostic and asset management capabilities, while ensuring low total cost of ownership.

Figure 1. Controller with Onboard I/O Module

ControlEdge™ is a next generation family of controllers providing secure connectivity through all levels of process and business functions, optimized operations, and maintenance efficiencies to meet your diverse automation needs.

Key Features

- Lowest power consumption in its category at a typical 1.9W (Non-redundant controller with onboard I/O)
- Native controller redundancy; no special programming required
- Temperature range -40 to 75°C (-40 to 167°F)
- High reliability with designed thermal paths
- HART-enabled onboard and expansion I/O modules. No extra hardware required for Digital HART data and diagnostic access. For use in RTU program and remotely via HART IP
- Efficient wiring and configuration saving installation and maintenance time
- Transient Suppression on every I/O channel and every communication port
- An onboard wireless I/O solution to integrate ISA100 instruments
- Foundation Fieldbus I/O
- Asset management of connected HART, Foundation Fieldbus and ISA 100 devices via Honeywell's Field Device Manager
- A powerful IEC 61131-3 programming environment
- Liquids and Gas flow calculations in the same controller
- Gas and Liquid custody transfer Meter Runs compliant to API 21.1 and API21.2 standards
- Flexible communication options, local and remote
- Industry standard protocols of Modbus, DNP3 and user defined protocol
- Datalogging to on board memory or optionally on local SD card
- Hazardous area certified to FM/CSA Class I Division 2, IECEx Zone 2 and ATEX Zone 2

BENEFITS

Lower Installation Cost **Reduce Field Travel** **Better Remote Decisions** **Reduce Onsite Time** **Better Availability**

Secure Communication **More than Telemetry**

The Lowest Power Consumption & High Reliability

Solar power is a common requirement in remote applications. The more power consumed, the bigger the batteries, solar panels and infrastructure need to be, all adding up to an expensive exercise.

ControlEdge RTU has one of the lowest power consumption capabilities on the market at a typical 1.9 Watts, even when using HART. When HART is required, other RTUs require additional hardware, consuming even more power, whereas ControlEdge RTU has HART onboard.

The follow-on effect of consuming less power is that there is less heat produced. This, coupled with an aluminium body and designed thermal paths, means ControlEdge RTU has less component stress which equates to higher reliability. Even in tropical and desert environments, either minimal or no cooling is required.

Endures Tough Environments

ControlEdge RTU has been designed to withstand the toughest environments, with an operating temperature range of -40 to 75°C in humidity of 5% to 95%. Most other RTUs only go up to 70°C. ControlEdge RTU has conformal coating to G3 and is hazardous area certified to FM/CSA Class I Division 2, IECEx Zone 2 and ATEX Zone 2.

RTUs are typically placed next to metal infrastructure such as pipelines, so to reduce risk of transient surges, every I/O channel and every communication port on ControlEdge RTU has transient suppression.

High Performance Controller

With modern processors, ControlEdge RTU has the power for today's applications and spare reserve to meet tomorrow's needs. ControlEdge RTU comes in two forms: Non-redundant controller with onboard I/O module and redundant controller. Both support expansion I/O modules.

Native Controller Redundancy

Honeywell's redundancy is ready to go and ISASecure Level 2 certified. There is no need to program any differently from a non-redundant controller. ControlEdge RTU takes away the complexity. No additional infrastructure is required to synchronize the data between CPMs and to connect with I/O modules. Project configuration can be stored in the controller and retrieved when required.

Figure 1. Redundant controller with two expansion I/O modules

Inputs / Outputs - 2020 Platform I/O Modules, HART Enabled

ControlEdge RTU supports onboard and expansion I/O modules.

28 Channel Mixed I/O Module:

Channel type	Qty	
Analog Inputs:	8	HART
Analog Outputs:	2	HART
Digital Inputs:	10	
Digital Outputs:	6	
Pulse Inputs:	2	

By having built-in HART, ControlEdge RTU has no requirement for separate expensive and power - consuming HART I/O modules or third party components.

Foundation Fieldbus I/O

ControlEdge RTU supports Foundation Fieldbus I/O through the proven Series C FIM4 (Foundation Fieldbus interface module).

Wireless I/O

By connecting a Field Device Access Point (FDAP), ControlEdge RTU provides an onboard Wireless I/O

Reduce onsite time through wireless I/O

solution for ISA100 devices. These wireless devices appear as native I/O. They are programmed and managed with the same configuration tool, ControlEdge Builder. You benefit from the same smart device capabilities as wired smart devices. Wireless I/O is effective when traditional wiring is expensive, difficult or at risk of damage.

The Value of Smart Data: HART, ISA 100 and Foundation Fieldbus Devices

Distributed operations can require crews of field operators that travel each day over long distances and dangerous terrain. ControlEdge RTU can help bring that requirement to an end. It is not only a large operating expense, but it also can be unsafe —and that is just the trip to site. The traditional RTU strengths of data logging and good sub-system communications with local devices, alongside smart device integration with HART, Foundation Fieldbus or Wireless I/O, enables better fault modeling, both directly on the RTUs and at central locations. This means that each field operator is much more productive and can manage more remote sites than without the implementation of ControlEdge RTU.

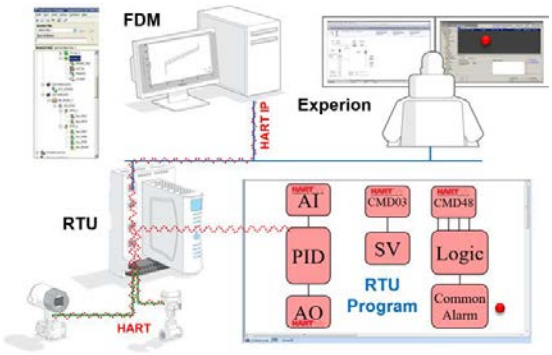

Figure 2. HART data accessed by RTU, Experion & FDM

In Figure 3, we show ControlEdge RTU accessing both the HART device's digitally accurate secondary variable and its diagnostic data. After receiving a common alarm from the RTU, the operator might go to a dynamically scanned detail page to diagnose the fault further or optionally use Honeywell's Field Device Manager to connect through to the HART device using HART IP. Wireless devices provide a similar experience and can also be managed by Field Device Manager.

For more information on smart device management, refer to the Field Device Manager (FDM) Product Information Note.

Efficient Wiring and Assembly

Wiring built-in terminals can be a frustrating and error prone exercise for an installer. To combat this, ControlEdge RTU comes with removable field terminals allowing the installer to hold the terminals in their hand for wiring even with gloves on. In addition, the terminals are printed with the I/O type and number giving the installer positive identification of the terminal against the ferrule label. Combined, this saves upfront installation cost and reduces wiring errors.

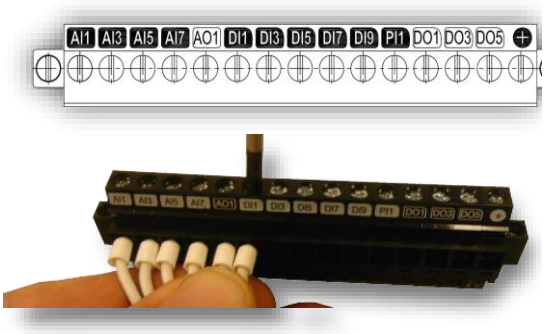

Figure 3. Positive identification on removable terminals

Figure 4. RTU Processor ease of removal from IOTA

Flexible Communications

Standard Protocols: Two features that really differentiate RTUs from PLCs are their communications capability and with that, data logging and history backfill. RTUs need to efficiently manage unreliable, low bandwidth networks. They need to communicate as a slave device to a remote SCADA system, sometimes over a redundant link on two different mediums; but also as a master to local subsystems like gas chromatographs and smart drives. In a "store and forward" type strategy, if communications to SCADA are interrupted, then the RTU needs to buffer data. Once communications are restored, then history is backfilled to SCADA.

ControlEdge RTU covers all the scenarios by supporting SCADA protocols such as Modbus and DNP3 over:

- Two Ethernet ports
- Two RS-232 serial ports
- Two RS-485 serial ports

With DNP3, history recovery back to Experion is natively supported. To allow this backfill to be 'tuned' to the available network bandwidth, analog input deadbands can be adjusted remotely from Experion.

User Defined Protocol: ControlEdge RTU gives more flexibility on protocol support by providing necessary infrastructure to communicate to serial devices that understands nonstandard protocol.

On-board Applications

Robust Data Logging Ensures Data Availability: ControlEdge RTU has data logging capabilities to record values to data files in flash memory or the onboard SD card (optional), supporting up to 32GB of data. This ensures important data is never lost and is available for future analysis. The data files can be retrieved remotely through ControlEdge Builder or a utility, and then displayed or imported by many Windows applications. ControlEdge RTU can log data continuously at a pre-defined interval, or data logging can be event-triggered.

Meter Runs turn your RTU into a Flow Computer / EFM: ControlEdge RTU Meter Run option provides an API 21.1 & API 21.2 compliant gas & liquid custody transfer solution. Meter Runs work alongside the rest of the RTU control program and are easily configured with a 5-step wizard. Data logs and audit trails can be imported by Experion® for use in gas management systems. They are also available through Enron Modbus protocol.

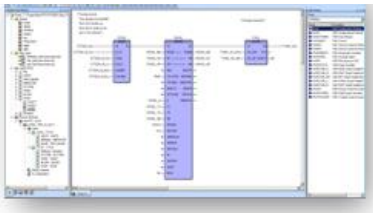

Figure 5. RTU Builder, an IEC 61131-3 Environment

RTU is more than telemetry - Turn RTU into Flow Computer / EFM to measure both Gas and Liquid flow

ControlEdge Builder — An Integrated Configuration Environment

ControlEdge Builder is the configuration tool to design, configure, program and maintain your ControlEdge RTU or ControlEdge PLC. ControlEdge Builder is fully compliant to IEC 61131-3, supporting all five programming languages.

- Ladder Diagram (LD)
- Function Block Diagram (FBD)
- Structured Text (ST)
- Instruction List (IL)
- Sequential Function Chart (SFC)

In addition to the basic function blocks that come with an IEC 61131-3 environment, ControlEdge Builder includes Honeywell designed function blocks derived from our extensive industry experience and family of market leading automation controllers. Function blocks include PID, Device Control, Auto Manual, Fan Out, Ratio Control, Position Proportional, Totalizer and AGA/API/IEC gas and liquids calculations, just to name a few. There are also ControlEdge RTU-specific function blocks such as HART Command 3, 'read dynamic variables' and HART Command 48, 'read diagnostics status'.

ControlEdge Builder is designed to connect locally or remotely to the RTUs using TCP/IP. Personnel can program on site or from a remote central location to save time and mitigate the need for onsite work.

Remote Firmware Upgrades

Being able to remotely upgrade RTU and wireless device firmware is very important when there are hundreds of RTUs geographically distributed. To account for low bandwidth, unreliable networks, remote firmware upgrading from ControlEdge Builder is a two-step process ensuring uptime of the RTU and reliability of the result.

Low total solution cost through integration with Experion SCADA or Elevate

Remote Diagnosis

Just as important as being able to remotely program and upgrade ControlEdge RTU is being able to remotely diagnose the health of the RTU. ControlEdge Builder provides a high definition analysis of the health scenario, leading to fewer site visits.

Simulation

Improve your project schedule by simulating the controller. Simulated controller supports execution of the program and can communicate with SCADA using Modbus. Multiple simulated controller can be created.

Experion SCADA/Elevate and ControlEdge RTU

Through use of open protocols, ControlEdge RTU is designed to work with any SCADA system. When combined with Experion SCADA/Elevate, it is the perfect solution. With support for up to 5,000 RTUs per server and further server-based expansion through the patented Distributed System Architecture (DSA™), Experion is a highly scalable system with the highest level of reliability, safety and security.

Faster, Less Error Prone SCADA Configuration & Maintenance

ControlEdge RTU integration in Experion SCADA reduces the time to configure and maintain the combined solution by 80%.

- Automatic SCADA point configuration and maintenance based on RTU program
- Standard System Status Displays & Alarms for ControlEdge RTU hardware
- Meter templates aligned to ControlEdge RTU Meter Runs

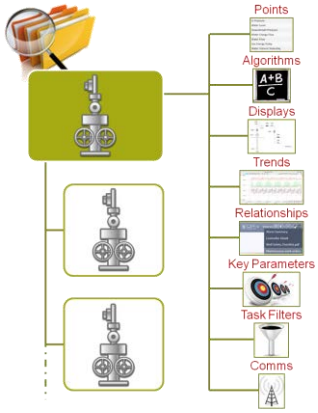

Figure 6. Experion Equipment Templates

Exception-Based Monitoring & Control

Experion provides radically simplified SCADA configuration and superior operator and pipeline controller experience through the template-based Equipment concept. Experion can be configured and operated by 'equipment' like a gas wellhead or a pumping station rather than merely points. When you match an Experion Equipment template with a ControlEdge RTU, the cost of configuring the full solution is simplified even further.

Experion and ControlEdge RTU have been designed to solve remote automation requirements in the oil and gas, mining, water and other industries.

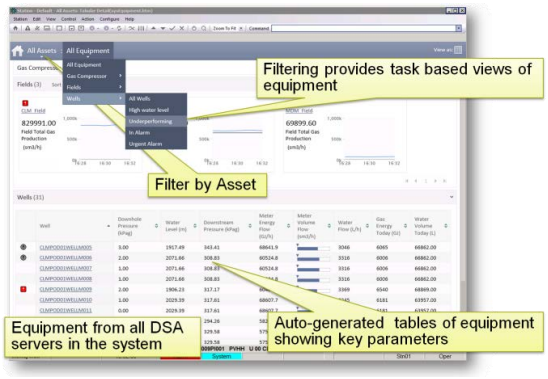

Figure 7. Experion Equipment Display

For more information, refer to the Experion SCADA Product Information Note.

For More Information

Learn more about how Honeywell's ControlEdge RTU Process controller at our website www.honeywellprocess.com or contact your Honeywell Account Manager.

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PN-17-27-ENG
June 2018

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