

Honeywell R330 Universal Marshalling Solution for Safety Owner's Manual

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Product Information Note

The Universal Marshalling Solution for Safety delivers standardized marshalling of field signals for central and distributed installations using signal conditioning assemblies. Each assembly can handle 16 IO channels including a default configuration of pass thru with disconnect and fusing. If required, Signal Conditioning Adapter (SCA) modules can be plugged in to the assembly to handle special signals including isolation, intrinsic safety, relay, etc. Eliminating the need for 3rd party barriers. The UMS support flexible wiring configurations without the need for custom wiring.

The Universal Marshalling Solution for Safety delivers the next phase of Honeywell LEAP™ lean project implementation philosophy through standardization of marshalling design, enabling early ordering and late changes in field wiring while ensuring low cost of ownership

Key Features

- Complements Universal I/O, extending LEAP to marshalling
- 1st party marshalling and optional signal conditioning
- Simple, compact, cost effective and repeatable
- Segregates I/O modules from complicated field wiring
- Eliminates 3rd party components
- Increases I/O density from 448 to 720 I/O per full size cabinet
- Reduces marshalling cabinet count
- Optional combo cabinet with IOM in front and SCA in rear – 256 to 384 I/O
- Temperature range -40 to 70°C (-40 to 158°F)
- Hazardous area certified to CSA Class I Division 2, IECEx Zone 2 and ATEX Zone 2
- Uniform marshalling design for general purpose and hazardous areas
- Eliminates IOTAs used for GI-IS, externally powered I/O and temperature I/O's
- Works with Safety Manager SC Universal Safety IO, like PUIO, PDIO and RUSIO

Figure 1: Universal marshalling solution results in reduced costs.



Universal Solution

BENEFITS

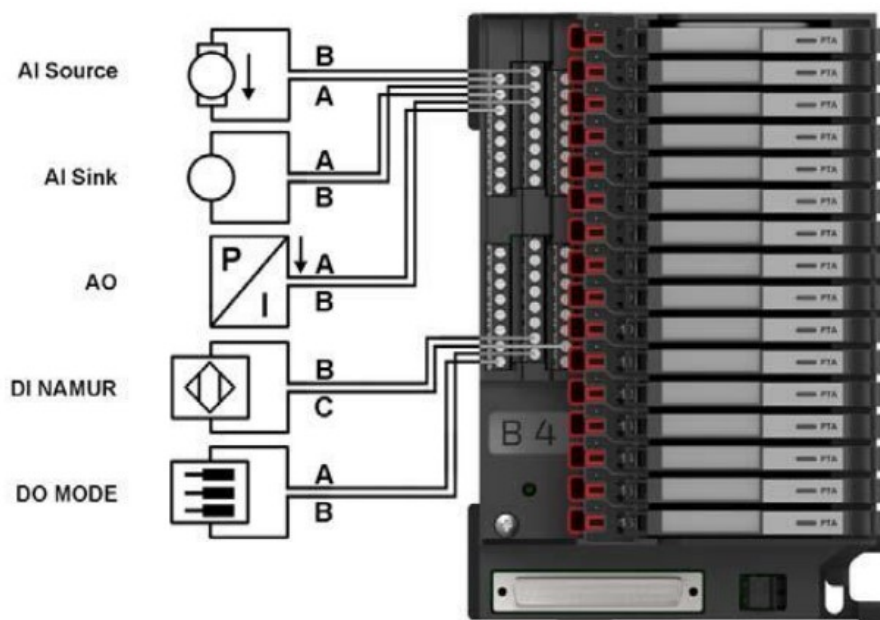
- Lower installation and maintenance cost
- Standard marshalling cabinet builds

- Uniform design for Non-IS and IS I/O
- Lifecycle support per Honeywell's long-term support model
- Enables late changes to field wiring
- Supported in USC
- Reduces marshalling costs by 25%
- Reduces cabinet design, build, documentation and testing by 40%

Standard industry practice requires safe disconnect with test points for instrument wiring connected to the safety system. The 16-channel signal conditioning assembly by default provides passthrough and knife disconnect functions addressing a broad range of system-powered analog HART I/O and digital I/O, interfacing to general purpose or to Division 2 / Zone 2 areas. Optional plug-in adapters address 3-wire or 4-wire analog inputs, relays and Intrinsically Safe barriers. This extends LEAP™ benefits to include field signal conditioning and wiring – a powerful combination with Universal Safety I/O.

Inputs/Outputs

Figure 2: Example of field devices connected to SCA's.



Supported signal types with default fuse, disconnect and test points:

- AI with HART 4-20mA
- AO with HART 4 – 20mA
- AI 3 wire, 4-20mA
- AI Source devices
- DI 24VDC Relay
- DO 24VDC Relay with LM
- DI NAMUR
- Intrinsically Safe AI/AO
- Intrinsically Safe DI/DO

Standard Cabinet Design

In every project, a large amount of prototype marshalling design is performed, which can take an extensive amount of time and effort. The result is a marshalling cabinet design for different signal types which will be

replicated for marshalling cabinets across the project. The universal marshalling solution addresses the various signal conditioning and wiring requirements using a 10mm thick plug in adapter, SCA. With this the IO channels can be defined and SCA adapters selected to address the various signal conditioning requirements, on a channel by channel basis at any time during the project. This allows for a uniform design across the board, irrespective of the signal type.

All SCA plug-in modules are the same size allowing plug and play in the marshalling cabinet design. There is no longer a requirement for custom cabinet designs. This eliminates exhaustive engineering hours spent on prototype designs and enables faster cabinet delivery from the factory, allowing late procurement and shorter project timelines.

Reduced Cabinet Costs

In conventional marshalling designs, the I/O count in a standard 2 meter cabinet varies from 100 to 240 I/O's. With Honeywell's UMS this will increase from 448 to 720 I/O's in one universal marshalling cabinet.



Figure 4: Signal Conditioning Adapters

TÜV approved SIL Adapters

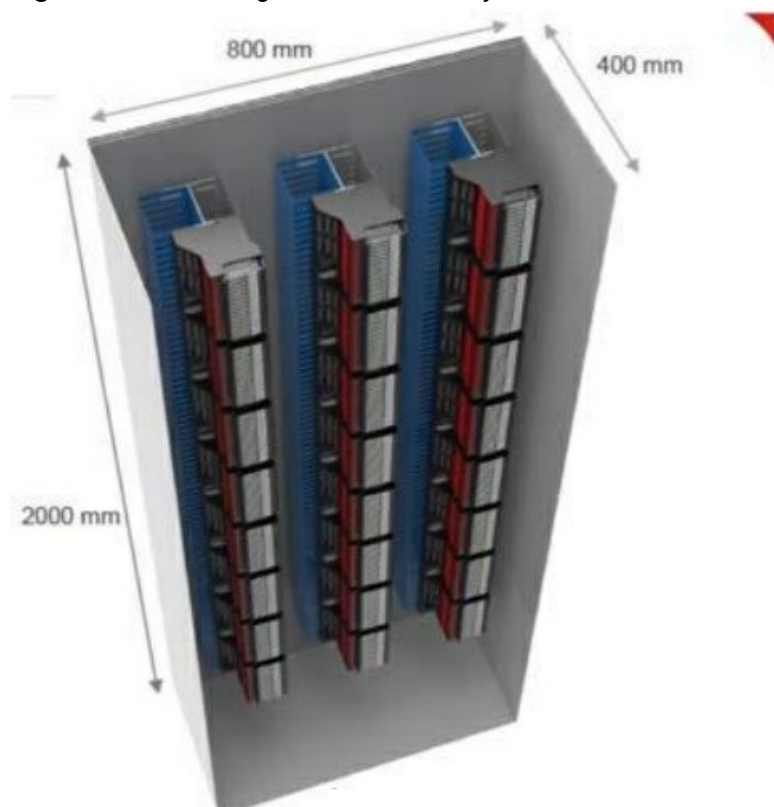
The SCA adapters are certified to be used in SIL loops. These TÜV certified adapters have met manufacturer design process requirements of Safety Integrity Level SIL 2 and 3. The adapters can be used in Safety Integrity Functions, to build up the complete safety loop.



Fire & Gas applications

The high current baseplate FC-USCA01 is designed to fulfill the needs in F&G applications, this can provide the power for high current output devices like beacons and horns. It will also power the three wire analog transmitters, like open path, flame, gas or smoke detectors.

Figure 5: Marshalling cabinet Uniformity.

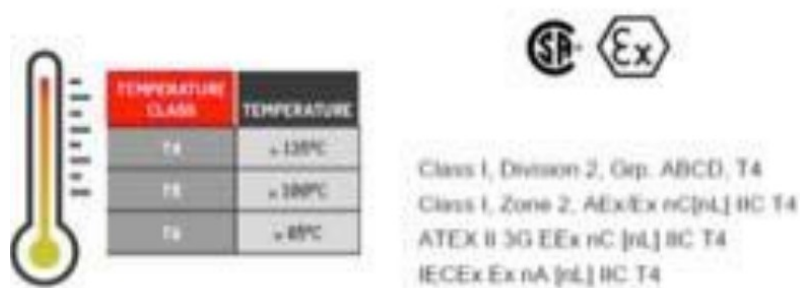


Looking at an example project with 5000 I/O would typically require 21 marshalling cabinets. The 16 channel signal conditioning assembly is 198mm (H) X 138mm (W) X 145mm (D) and uses 10 mm plug in adapters. This helps to wire more I/O into the cabinet. Universal Marshalling Solution offers standard cabinet builds in two versions, High Density Universal Marshalling Cabinets with 720 I/O and Low Density Universal Marshalling Cabinets with 512 I/O per cabinet. For the same 5000 I/O project, the cabinet count is reduced to 8 marshalling cabinets using high density cabinet design. This reduces both CAPEX and OPEX of the end user.

Endures Tough Environments

Universal signal conditioning assembly and adapters are designed to withstand the toughest environments, with an operating temperature range of -40 to 70°C in relative humidity of 10% to 90%.

Figure 6: Universal Marshalling Solution environmental specifications.



While most of the conventional IS barriers only go up to 60°C, SCA is designed for 70°C. The 10 mm thick Universal Analog and Digital Isolators are the thinnest in the industry. The SCA hardware has conformal coating to G3 and is hazardous area certified to CSA Class I Division 2, IECEx Zone 2 and ATEX Zone 2. SCA can also be optionally mounted in the Universal Safety Cabinets (USC) in hazardous locations.

System Hardware is Unaffected

UMS enables the flexibility to combine a variety of field signals based on process needs on the marshalling side, while remaining separated from I/O modules and safety system electronics.

Figure 7: Signal conditioner assembly



The 16-channel signal conditioning assembly is connected to the Series C IOTA using the Honeywell mass termination cable. UMS support flexible wiring configurations without the need for custom or craft wiring and eliminates unintentional access of I/O modules during maintenance.

Reduced Spares

As the signal conditioning requirements and field wiring complexities are addressed by the signal conditioning assembly, some field termination and 3rd party barrier types are no longer required. This reduces the number and types of spares that a customer needs to maintain.

Figure 8: Some unique IOTAs are no longer required.



Table 1: SCA Signal Type and adapters

Signal Type	SCA Adapters	SIL
DIL, AI, DO, DOL, AO	CC-UPTA01	3
DI	FC-UDI501	3
DIR	FC-UDI501	1
DOR	FC-UIR501	3
3 wire AI	FC-UDOR01	3
Prox. switch Namur	FC-UAIA01	2
Prox. switch Namur SN	FC-UDIN01	2
AI source device	FC-UDNS01	2
Input Relay	FC-UAIS01	3
Output Relay F&G	FC-UDIR01	2
AI Barrier	FC-UDOF01	2
AO Barrier	FC-UGAI01	2
DI/DO Barrier	FC-UGAO0	2

- Operator Interface



- Safety Controller & IO



- Marshaling



- Field instrumentation



Figure 9: Honeywell's solution reduces spares requirements.

Many safety marshalling suppliers have one SKU for each signal type in their portfolio while Honeywell's UMS offer one universal adapter for each analog and digital signal. Isolators and IS barriers are available as universal analog adapters and universal digital adapters at a very competitive price. This reduces spares and extends Honeywell LEAP™ philosophy into OPEX reduction for the customer and enables late change flexibility in project execution.

Honeywell Lifecycle Support

Typically, various components used inside the marshalling cabinets are provided by different 3rd party vendors. This often results in longer cabinet lead times.

Marshalling Cabinet

Figure 10: Components used inside marshalling cabinets.

Replacing 3rd party components with UMS eliminates non-standard marshalling design, life cycle and leadtime

variations due to 3rd party hardware. As a single source vendor, Honeywell can provide components from field instruments to safety systems. Lifecycle support of marshalling follows the Honeywell system support standards. This enables faster cabinet delivery, allowing late procurement of up-to-date equipment.

For More Information

Learn more about how Honeywell’s Universal Marshalling Solution can improve your performance, visit <https://process.honeywell.com/us/en/products/control-and-supervisory-systems/distributed-control-systemsdcxs/experion-pks/i-o-modules/universalmarshalling-solution> or contact your Honeywell Account Manager, Distributor or System Integrator

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Documents / Resources

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