Fusion4 MultiPak

Oil is big business, and precision is everything. Additive faults can be expensive, but not all control systems are made equal.

With 35 years of additive control experience, having sold over 100,000 additive injectors worldwide, industry leader Honeywell Enraf has created the most advanced additive controller on the market. The Fusion4 MultiPak features the greatest I/O density available — which combines to offer exceptional functionality and unrivalled stream control. With enhanced information, precision and integration capabilities, Fusion4 MultiPak is part of an extensive portfolio of products which combine seamlessly. Turning a blind eye could cost you more than you think. Don't take the risk.

Global Experience. Locally Applied.

The Fusion4 MultiPak combines the industry standard MonoBlock additive metering and control manifold with the Fusion4 MSC-A (Multi Stream Controller – Additive). This system is designed exclusively to manage chemical injection, and continuously monitors the correct additive volumes across up to 12 streams (with future expandability to 24), ensuring the additive ratio is correct at every point in each transaction. The MultiPak is the perfect multiple stream additive injection solution for a number of chemical transfer operations:

- Road Loading
- Rail Loading
- Aviation Refueling
- Storage Transfers
- Marine Bunkering
- Pipeline Transfers
- Transport Bunkering
- Mining Reagent Dosing

Take Control

M - Main Menu	
1	12301 A01	0.00 ml
2	78997 A02	0.00 ml
3	B03 A03	0.00 ml
4	B04 A04	0.00 ml
5	B05 A05	0.00 ml
6	B06 A06	0.00 ml
7	B07 A07	0.00 ml
8	B08 A08	0.00 ml
9	B09 A09	0.00 ml
10	B10 A10	0.00 ml
11	B11 A11	0.00 ml
12	B12 A12	0.00 ml

Additive Progress

Location	789978997899789978	2
Product name	Product 2	B10
Additive mode	Smart comms	

Deviation **0.00 %**

ppm **0**

Additive volume **0.00 ml**

Load volume **0.00 L**

Press OK to view process data   08:27:01

Precision by Design
Utilising the Fusion4 MSC-A, the MultiPak brings a whole new dimension to the precision of additive injection applications. Precision is as much about knowing when things are going wrong, as it is about controlling when everything is right. MSC-A monitors more critical operational parameters than any other device, meaning that both it, and you, know as soon as the precision of your additive operation is threatened.

The Information Age
If precise control is at the heart of the Fusion4 MultiPak, then information is in its DNA. At every level the MSC-A collates, displays, archives and distributes an unparalleled level of system information, equipping the user to make the right operational and business decisions. Control optimization, transaction traceability, calibration security, and enhanced diagnostic tracking, are all facilitated by this advanced level of data, leaving the user without a shred of doubt about the effectiveness of their additive operation.

Connectivity is Key
The need for seamless integration is a core driver for the Fusion4 portfolio and the MultiPak excels in every aspect. Three ethernet ports and seven serial ports is testimony to that. The library of embedded communications protocols permits plug and play connectivity to other Honeywell systems, such as Terminal Automation Solutions (TAS), Load Computers and Fusion4 Portal software suite, as well as 3rd party systems utilising protocols such as Modbus. Additionally at the wetted end, the pre-installed MonoBlock hardware which controls the physical injection capability, is fully cabled, flow tested and calibrated in

the MultiPak Station arrangement, reducing installation costs and pre-commissioning start up time.

Efficient Configuration and Updates
Configure it from new in less than 60 seconds with the smart, handheld Local Access Device (LAD) for a quicker, more efficient start-up, and use the LAD again to update firmware live in the field, boosting productivity. There's no need to power down, open, and exchange EPROMs in the MSC.

Smart Calibration and Diagnostics
The Fusion4 MultiPak also includes a Calibration Wizard which automatically captures every calibration record (including time stamps, calibration volumes, k-factor corrections and even meter serial numbers), for greater traceability and security. Multiple Diagnostics Dashboards for complete hardware and communications monitoring from a single screen, helps boost reliability and reduce maintenance time.

Flexible I/O and Interfacing
Assign functions to any input or output with configurable I/O. Flexible interfacing is possible via the LAD, which can copy and paste a configuration files to and from any other MSC device. The LAD also facilitates two way data communications between the Fusion4 MSC, allowing rapid, secure transfer of transaction data, calibration records and firmware upgrades.

Remote Visibility
Fusion4 Portal software package is also supported for remote monitoring and printing of all MSC transactions, alarms and communication status via Ethernet or Serial comms.

Powerful Logging
The MSC can store 120,000 transaction logs, 2,000 alarm logs and 1,200 calibration records. Advanced alarm handling, meanwhile, monitors nearly twice as many injection control parameters than any other device, while its 8" QVGA full colour screen clearly annunciates and differentiates all alarm conditions across all 12 streams.

Full System Control
With modular expansion pack upgradability, the MSC-A has the I/O capability to manage all peripheral system elements such as pump starting and monitoring, tank level monitoring, block valve control and system pressure and temperature monitoring.

A Better Solution
Multiple Language Support:
English (US), English (UK), Chinese, Japanese, French, Spanish, Portuguese, Italian, Dutch, German and Polish.

Multiple Masters:
Can communicate with up to 6 master devices simultaneously, such as load computers, facilitating whole bay injection management.

Rapid Start-Up:
With the Calibration Wizard and 60-second configuration.

Zero Downtime:
Firmware upgrades live in the field with the LAD.

Configurable, Expandable I/O:
Scalable functionality via MSC-A Expansion Packs.

Huge Transaction Archives:
Up to 120,000 transaction records.

Advanced Alarm Handling:
Monitor nearly twice as many injection control parameters than any other device.

Real-time Diagnostics:
From the multiple diagnostics dashboards (Stream, I/O type, System Health, Ethernet and Serial Comms) plus Switch Count Register for every single I/O.

Trust Us
- Over 60 years experience in terminal operations
- Over 100,000 injectors sold worldwide
- A pioneer in smart additive injection
- Solutions for every application
- Local support with global expertise
- Single source provider with wide portfolio

Keeping You in Control
The Fusion4 LAD increases functionality of the MSC in the field, allowing intuitive navigation of the device menus. Hazardous area approved, two way data communications between the MSC and the LAD facilitate rapid downloading of transaction data, alarm logs, and calibration records, to the LAD's removable SD card. Calibration records can then be remotely loaded into a dedicated report generator optimum traceability. The LAD also enables rapid upload of configuration files for super fast set up, or download for copying to other devices or secure system back-up. Firmware upgrading to live devices in the field, uploading of language packs, assignable short cut key, and backlight for nighttime operation are just a few of the many other LAD features.

Technical Features

Additive Supply
Suitable for wherever there is a pressurized additive supply with a typical additive supply pressure of 1 MPa (10 bar/145 psi). A minimum 300 kPa (3 bar/45 psi) differential between the additive supply pressure and main product flow pressure is required.

Mounting Arrangements
The Fusion4 MultiPak is available in 'Station' and 'Modular' formats. The Station consists of pre-integrated additive injector panels with the Fusion4 MSC-A, on a free-standing frame, providing rapid installation and commissioning. Modular arrangement provides the additive injector panels and the MSC-A individually, for flexible field installation. Both systems are available with one or two 6-way injector panels.

Expansion Packs (EXP)
Enable the modular enhancement of MSC-A functionality. Each EXP consists of a hardware and a licensing element, which incrementally scales up the control capability of the MSC-A. See the Expansion Pack Table below for details. Each EXP can be upgraded in the field.

Injector Mounting
MonoBlocks mounted on the rear panel of the Fuison4 MultiPak Station will be inverted. This ensures that all injector inlets and outlets are at the same side of the station, for both sets of injectors.

Standard/Low/Extended Flow Injectors
Standard and low flow injectors are ATEX/IECEx options. Extended flow injectors are the FM/CSA standard.

Based on typical loading flow rates of 2,400 L/min or 600 gal/min: Standard flow and Extended flow injectors accommodate applications between 100 and 3,000 ppm with a typical shot size of between 15cc and 200cc. Low flow injectors accommodate applications between 20 and 600 ppm, with a typical shot size of between 3cc and 40cc.

Ryton (Polymer) Gears
Fitted as standard, with stainless steel available where Ryton is chemically incompatible.

Blocking Solenoids
Increase the security of any additive operation by providing a secondary isolation capability to every additive stream. This minimizes the potential for large additive losses due to mechanical failures.

Inlet and Outlet Isolation Ball Valves
Available pre-installed on either side of the MonoBlock, for manual isolation.

'Quick Release' Flushing Connections
Fitted between the isolation ball valves and the block, allowing the decontamination of the MonoBlock prior to maintenance, are also available.

Technical Specifications

Approvals	MSC	Sensor	Solenoid
ATEX	II 2 G Ex d [ia] IIB T6 Gb	II 2 G Ex d IIC T6 Gb	II 2 G Ex m II T3/T5 Gb
IECEx	Ex d [ia] IIB T6	Ex d IIC T6 Gb	Ex m IIC T3/T5 Gb
FM	Class1 Div1 Group C&D T6	Class1 Div1 Group C&D T6	Class1 Div1 Group C&D T3A/B
CSA/CUL	Class1 Div1 Group C&D T6	Class1 Div1 Group C&D T6	Class1 Div1 Group C&D T3A/B
PESO/CCOE	Zone 1 Ex d [ia] IIB T6 Gb	Zone 1 EEx d IIC T6	Zone 1 Ex mb

Flow	ATEX/IECEx/PESO	FM/CSA
Nominal K-Factor	Standard Flow 760 p/L Low Flow 1460 p/L	Extended Flow 5000 p/USgal
Meter Accuracy	0.50%	0.50%
Meter Repeatability	0.25%	0.25%
Max Flow Rate	11 L/min	2.5 USgal/min
Min Flow Rate	0.1 L/min	0.1 USgal/min
Max Pressure	1.6 MPa	400 psi
Max Viscosity	300 cst.	300 cst.

Environmental		
Operating Temperature	-20 °C to +65 °C (SSC -40 °C to +65 °C)	-4°F to +149°F (SSC -40°F to +149°F)
Storage Temperature	-40 °C to +85 °C	-40°F to +185°F
Protection Class	IP66	IP66
Humidity	5% - 95% Non-Condensing	5% - 95% Non-Condensing

Materials		
Frame	Galvanised Steel	Galvanized Steel
Back-plate	304 Stainless Steel	Aluminum
Enclosure	Aluminium, Anodised	Aluminum, Anodized
Manifold	303 Stainless Steel	303 Stainless Steel
Meter Gears	538 Ryton (SS optional)	538 Ryton (SS optional)
Solenoid Seals	Isolast Plus® (J9515) (PTFE optional)	Chemraz® (PTFE optional)

Connections		
Cable entries	6xM40, 6xM32, 2xM20	4x 1¼" NPT, 4x 1" NPT
Manifold Connections	3/8" NPT	3/8" NPT
Isolation Valves (optional)	½" NPT	½" NPT

Electrical		
Voltage	88 to 264 Vac 50/60 Hz	88 to 264 Vac 50/60 Hz
Flow meter Inputs	12 x 5 kHz dual input Configurable as 24 single PI	12 x 5 kHz dual input Configurable as 24 single PI
DC Inputs (max)	60	60
AC Inputs (max)	12	12
DC Outputs (max)	4	4
DC/AC-EMR Outputs (max)	40	40
AC-SSR Outputs (max)	40	40
Analogue Inputs (max)	14	14
Analogue Outputs (max)	6	6
RTD's (max)	6	6
RS 485 Comms Ports (max)	7	7
Ethernet Ports	3	3

Interfacing	
Serial interfaces	RS 485, FlexConn, Modbus RTU, Modbus Legacy, Slip+, FMC Smith
Ethernet Protocols	FlexConn TCP/IP, Modbus TCP/IP
Display	8" WVGA colour TFT LCD screen
Languages	English (US), English (UK), French, German, Spanish, Dutch, Chinese, Japanese, Polish, Italian, Portuguese
Handheld Devices	Fusion4 LAD (Local Access Device), Fusion4 IR Controller (Infra Red)

Weights		
6-Way Panel	approx 70 kg	approx 155 lb
MSC-A	approx 53 kg	approx 115 lb
Station (full)	approx 210 kg	approx 460 lb

EXP Packs	Fusion4 MultiPak	Fusion4 MultiPak + EXP1	Fusion4 MultiPak + EXP2	Fusion4 MultiPak + EXP3
Typical Application	Cost effective communication based control with no field IO requirements. Includes multiple Serial Comms.	Mid level capabilty permitting 'Inject Now' pacing and basic field IO requirements. Plus multiple Serial Comms and Ethernet.	Advanced capabilty permitting enhanced field IO requirements including analogue and RTD. Plus multiple Serial Comms and Ethernet.	Superior capabilty permitting full hi-freq pacing and optimium field IO functionality for total system control and redundancy.
	# Up to 12 injectors – comms pacing # Up to 6 injectors – hi-freq pulse pacing # Self Pace Mode	# Up to 12 injectors – comms pacing # Up to 6 injectors – hi-freq pulse pacing # Up to 12 injectors – hardwired Inject Now pacing # Self Pace Mode	# Up to 12 injectors – comms pacing # Up to 6 injectors – hi-freq pulse pacing # Up to 12 injectors – hardwired Inject Now pacing # Self Pace Mode # Up to 7 injectors analogue pacing	# Up to 12 injectors – comms pacing # Up to 12 injectors – hi-freq pulse pacing # Up to 12 injectors – hardwired Inject Now pacing # Self Pace Mode # Up to 12 injectors analogue pacing
Hardware Included	1 x Backplane 1 1 x CAN-PSF 1 x CAN-ARM 1 x FUSE BOARD	1 x Backplane 1 1 x CAN-PSF 1 x CAN-ARM 1 x FUSE BOARD 1 x CAN-IN-OUT	1 x Backplane 1 1 x CAN-PSF 1 x CAN-ARM 1 x FUSE BOARD 2 x CAN-IN-OUT	1 x Backplane 1 1 x Backplane 2 1 x CAN-PSF 2 x CAN-ARM 2 x FUSE BOARD 2 x CAN-IN-OUT
	Note: Each injector requires 1 SPI + 1 AC Output	Note: Each optional Blocking Solenoid requires an additional AC Output		
Ethernet Ports	0	1	1	3
Serial Ports	3	3	5	7
Pulse In - hi freq	12	12	12	24
AC Out - SSR	12	16	20	32
AC/DC Out - EMR	0	10	20	20
AC Inputs	0	3	6	6
DC Inputs	0	15	30	30
Analogue Out	0	0	3	4
Analogue In	0	0	7	14
RTD's	0	0	3	6
Pulse Out	2	2	2	4

Identification Code

CV 1-6 Product Family
- **H** HELA50 Fusion4 MultiPak ATEX/IECEx
- **H** HELO70 Fusion4 MultiPak FM/UL

CV 7 Mounting
- **A** Fusion4 MultiPak Station MSC-A c/w 1 Backplate (6)
- **B** Fusion4 MultiPak Station MSC-A c/w 2 Backplates (12)
- **E** Fusion4 MultiPak Modular + MSC-A c/w 1 Backplate (6)
- **F** Fusion4 MultiPak Modular + MSC-A c/w 2 Backplates (12)

CV 8 I/O Expansion
- **A** Fusion4 MultiPak
- **B** Fusion4 MultiPak + Expansion Pack 1
- **C** Fusion4 MultiPak + Expansion Pack 2
- **D** Fusion4 MultiPak + Expansion Pack 3

CV 9 Supply Voltage
- **A** 110Vac - 50Hz
- **B** 120Vac - 50/60Hz
- **C** 230Vac - 50Hz
- **D** 240Vac - 50/60Hz

CV 10 Back Plate 1
Pos 1 Number Of Standard Flow Injectors — Back plate 1 (6)
- **0 1 2 3 4 5 6**

Pos 2 Number of Low/Extended Flow Injectors — Back plate 1 (6)
- **0 1 2 3 4 5 6**

Pos 3 Standard Flow & Gear Material — Backplate 1
- **0** No Standard Flow Injector Selected
- **A** Standard Flow — Ryton Gears — (760 p/L)
- **B** Standard Flow — Stainless Steel Gears — (760 p/L)

Pos 4 Low/Extended Flow & Gear Material Backplate 1
- **0** No Low Flow Injector Selected
- **C** Low Flow — Ryton Gears — (1460 p/L)
- **D** Low Flow — Stainless Steel Gears — (1460 p/L)
- **E** Extended Flow — Ryton Gears — (5000 p/USgal)
- **F** Extended Flow — Stainless Steel — (5000 p/USgal)
- **G** Extended Flow — Stainless Steel gears an HR elastomers — (5000 p/USgal)

CV 11 Back Plate 2
Pos 1 Number Of Standard Flow Injectors — Back plate 2 (12)
- **0 1 2 3 4 5 6**

Pos 2 Number Of Low/Extended Injectors — Back plate 2 (12)
- **0 1 2 3 4 5 6**

Pos 3 Standard Flow & Gear Material — Backplate 2
- **0** No Standard Flow Injector Selected
- **A** Standard Flow — Ryton Gears — (760 p/L)
- **B** Standard Flow — Stainless Steel Gears — (760 p/L)

Pos 4 Low/Extended Flow & Gear Material Backplate 2
- **0** No Low Flow Injector Selected
- **C** Low Flow — Ryton Gears — (1460 p/L)
- **D** Low Flow — Stainless Steel Gears — (1460 p/L)
- **E** Extended Flow — Ryton Gears — (5000 p/USgal)
- **F** Extended Flow — Stainless Steel — (5000 p/USgal)
- **G** Extended Flow — Stainless Steel gears an HR elastomers — (5000 p/USgal)

Identification Code *(continued)*

CV 12 Back Plate 3
Pos 1 Number Of Injectors Standard — Back plate 3 (18)
- **0** Not Yet Available

CV 13 Back Plate 4
Pos 1 Number Of Injectors Standard — Back plate 4 (24)
- **0** Not Yet Available

CV 14 Solenoids & Valves
Pos 1 Solenoid Seat Material
- **1** Isolast (ATEX standard)
- **2** PTFE
- **3** Chemraz (FM standard)

Pos 2 Solenoid Temperature Class
- **0** Not Requested
- **A** T3 - Exm
- **B** T5 - Exm
- **C** T6 - Exd

Pos 3 Blocking Solenoid, Isolation & Flushing Options
- **0** Not Requested
- **1** Isolation valves - Inlet & Outlet
- **2** Isolation valves - Inlet & Outlet + Flushing Points 1/4" QRC
- **3** Blocking Solenoid Only
- **4** Blocking Solenoid + Isolation valves — Inlet & Outlet
- **5** Blocking Solenoid + Isolation valves — Inlet & Outlet + Flushing Points 1/4" QRC
- **6** Thermal relief Assembly
- **7** Thermal relief Assembly + Isolation Valves — Inlet & Outlet

CV 15 Field Entry Plugs and Breather
Pos 1 Breather
- **0** Not Requested
- **B** Exd Breather/Drain

Pos 2 Field Entry Plugs
- **0** None
- **1** ATEX Half Set — 3 x M40, 3 x M32, 1 x M20 Exd Blanking Plugs
- **2** ATEX Full Set — 6 x M40, 6 x M32, 2 x M20 Exd Blanking Plugs
- **3** FM Full Set — 4 x 1¼", 4 x 1" Exd Blanking Plugs
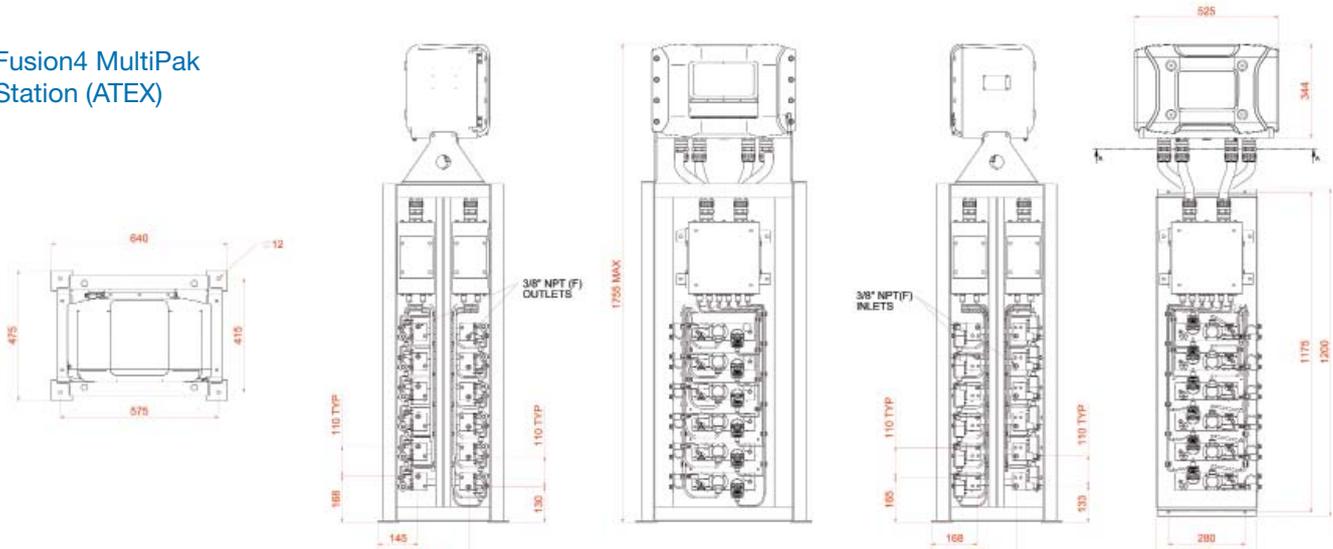
CV 16 Ex Approvals
- **A** ATEX
- **B** IECEx
- **C** CCOE (India)
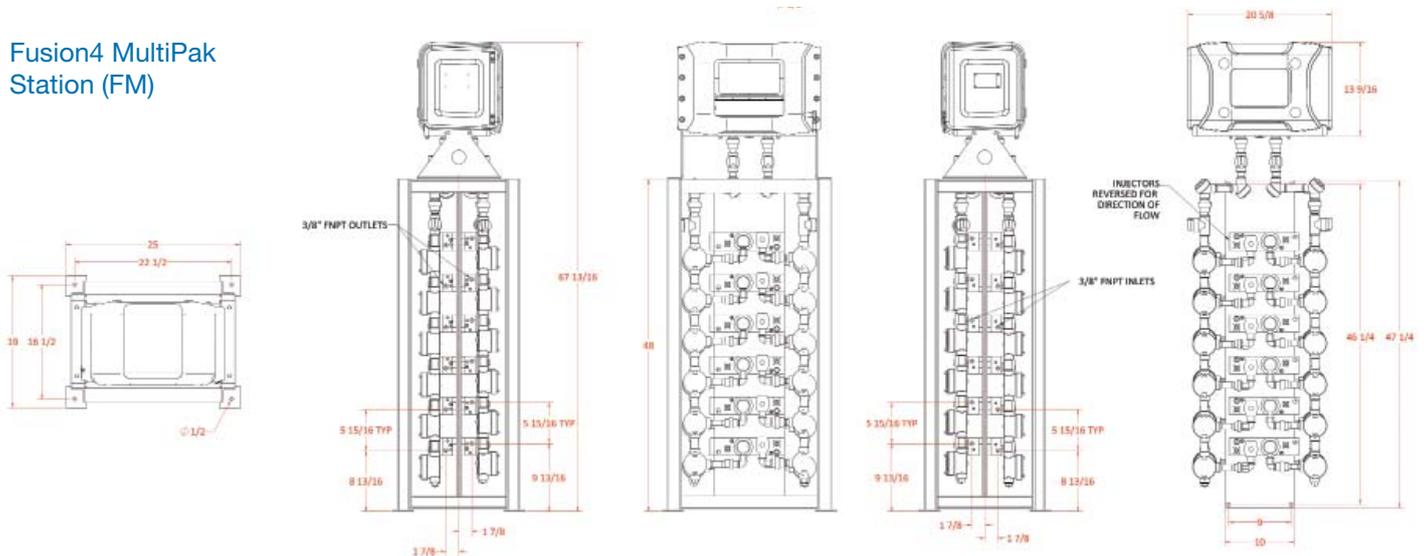- **D** FM
- **E** CSA

Your Identification Code

Dimensional Drawing

Fusion4 MultiPak Station (ATEX)

Fusion4 MultiPak Station (FM)

For More Information

To learn more about Honeywell Enraf's Fusion4 MultPak solutions, visit www.honeywellenraf.com or contact your Honeywell Enraf account manager.

Americas

Honeywell Enraf Americas, Inc.
2000 Northfield Ct.
Roswell, GA 30076
USA
Phone: +1 770 475 1900
Email: enraf-us@honeywell.com

Asia Pacific

Honeywell Pte Ltd.
17 Changi Business Park Central 1
Singapore 486073
Phone: +65 6355 2828
Email: enraf-sg@honeywell.com

Europe, Middle East and Africa

Honeywell Enraf
Delftechpark 39
2628 XJ Delft
The Netherlands
Phone: +31 (0)15 2701 100
Email: enraf-nl@honeywell.com

Honeywell Enraf

Your Terminal Operations Partner