Honeywell Enraf

Intuitive loading control.

Honeywell Enraf's Fusion4 multi stream controller for loading provides custody transfer approved loading control and sophisticated features with the world's most intuitive operator interface. Controlling up to 24 meter streams, its large 8" WVGA full color display and keyboard and icon-driven interface provide intuitive monitoring and control. Driver identification, vehicle data entry, product scheduling, batch recipe details, and transaction control are all simple to set up and review. Quick start up times, calibration wizards, diagnostic dashboards and zero-downtime upgrades keep the operation moving. The scalable, modular design features expandable I/O, and the widest selection of protocol libraries and communication network capabilities for seamless, cost effective integration into your operation.

Global Experience. Locally Applied.

The MSC-L controls up to six loading arms simultaneously for precise, safe and reliable loading and transfer of high value product at road loading, rail, and marine terminals, as well as tank farms. Custody transfer approved and suitable for hazardous areas, it brings Fusion4's unique, intuitive user-experience to the loading operation.

- Rail Loading
- Road Loading
- Aviation Refuelling
- Storage Transfers
- Marine Bunkering
- Pipeline Transfers
- Transport Bunkering
- Unloading

Uncompromising Control

Smarter Control: the Fusion4 Interface

The MSC-L uses a smart, "app-driven" interface to leverage users' familiarity with smart phones and tablet computer technology. Self-explanatory graphical on-screen icons make it uniquely intuitive to operate, drastically cutting training times and human error.

Users benefit from complete visibility and control of all major functions in the field with little or no training. Tanker drivers can quickly and simply input and control their loading requirements. Real time dynamic displays with status bar guidance and transfer progress status indicators provide at-a-glance monitoring of all loading operations.

Tailored to the Operation

With the world's most advanced multi stream controller users can configure the level of detail displayed to meet operators' requirements and choose from over 15 languages.

FlexFlow – a configurable workflow function – enables users to choose customer-specific operational sequencing for a tailored, smooth user experience that adapts to the operation.

Scalable and Modular

Control for up to 24 meter streams simultaneously helps you do more with less. A modular design allows common building blocks to be added to meet basic or sophisticated operational requirements for a cost effective solution.

In addition, the integrated additive and blend capability allows the free configurability of meter inputs to be assigned as blend streams or additive streams, in either single pulse or dual pulse configuration, as the user sees fit, for the most comprehensive solution in the industry.

Optimized System Connectivity

A wide range of protocol libraries and communication network capabilities and optimized electronic integration allow seamless connectivity with industry standard terminal automation systems, protecting existing investments.

Powerful Alarm Handling

Fusion4's advanced alarm handling monitors nearly twice as many parameters as any other device, while its large color screen clearly annunciates and differentiates all alarm conditions, for a safe, reliable operation. User configurable alarms provide additional flexibility, allowing the operator to quickly select both the alarm conditions and define alarm messaging through the menu structure.

Set up and Maintenance

Starting up in under a minute, the MSC-L features live upgrades, calibration wizards and configurable I/O to assign functions to any input or output for faster installation and set-up. Real-time stream, I/O type and system diagnostics keep the operation running smoothly, while the Fusion4 Portal software helps achieve the highest standards of reliability. Its features include remote monitoring, configuration and printing of all MSC transactions, alarms and communication status via Ethernet or Serial comms.

Full Featured

Full color screen and keyboard:
Intuitive monitoring and control using the Fusion4 interface.

Rapid start-up:
In under a minute with the Calibration Wizard and quick configuration.

Zero-downtime:
Firmware upgrades live in the field with the LAD.

Configurable, expandable I/O:
For flexible operations.

Advanced alarm handling:
Monitor nearly twice as many control parameters as any other device.

Real-time diagnostics:
Live stream, I/O type, and system diagnostics.

Multiple language support:
English (US), English (UK), French, German, Spanish, Dutch, Chinese (simplified), Japanese, Polish, Italian, Portuguese, Swedish, Thai, Russian, Arabic, Brazilian Portuguese and Turkish.

Secure

– Multi level security access
– External, sealable weights & measures switch
– Separate enclosure security seal
– Onboard Event recording
– On screen W&M compliance icon
– On screen device locked icon (system menu)
– Downloadable proving record

Connect

– 7 Serial Ports
– 3 Ethernet Ports
– Hazardous area LAD – local access device – service tooling
– MiniPak IR Controller backward compatibility
– Fusion4 Portal – remote printing, monitoring, configuring and diagnostics software
– Terminal Manager TAS integration
– RIT Panel interfacing

UX

– 8" Super WVGA color LCD screen, 16:9 aspect ratio.
– Auto brightness – Ambient light sensor
– Onboard user selectable language library – English (US), English (UK), French, German, Spanish, Dutch, Chinese (simplified), Japanese, Polish, Italian, Portuguese, Swedish, Thai, Russian, Arabic, Brazilian Portuguese and Turkish
– Onboard petrochemical product icon library (EU, US)
– Configurable progress bar product colors
– Configurable progress screen dynamic data elements
– On screen user prompting

Maintain

– Dual redundancy power supplies
– Real time, on screen load profile graphs
– Simulated DCV mode
– Diagnostic Dashboard
– Serial & Ethernet diagnostics
– I/O switch count
– Service due reminder

Install

– Base and rear mountable
– Single plane wiring area
– High/low voltage separation
– Color coded terminal connectors
– Easy-pull tabbed terminal connectors
– Integrated termination floor plan inside enclosure
– Anti cross-over board connectors
– Metric and Imperial gland arrangements
– Captured cover bolts
– Lifting eyes

Configure

– Configure remotely from Fusion4 Portal
– Configure in the field with LAD upload
– Free form User defined IO functions
– Configurable batch set up workflow
– Programmable alarms
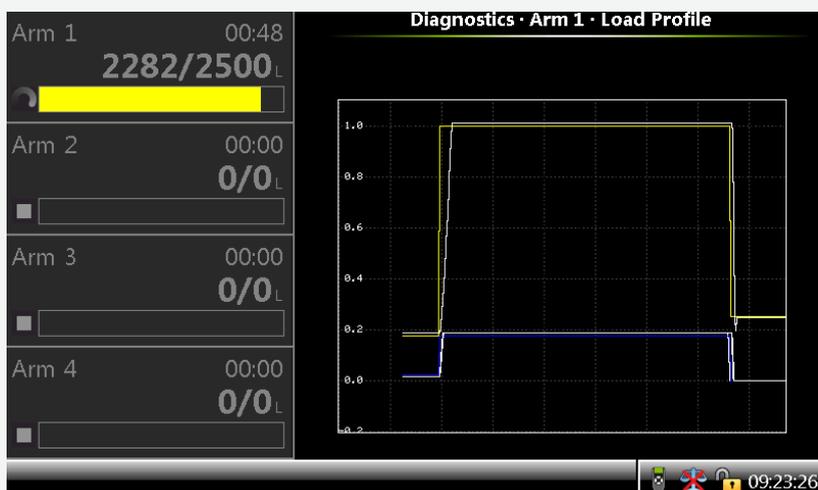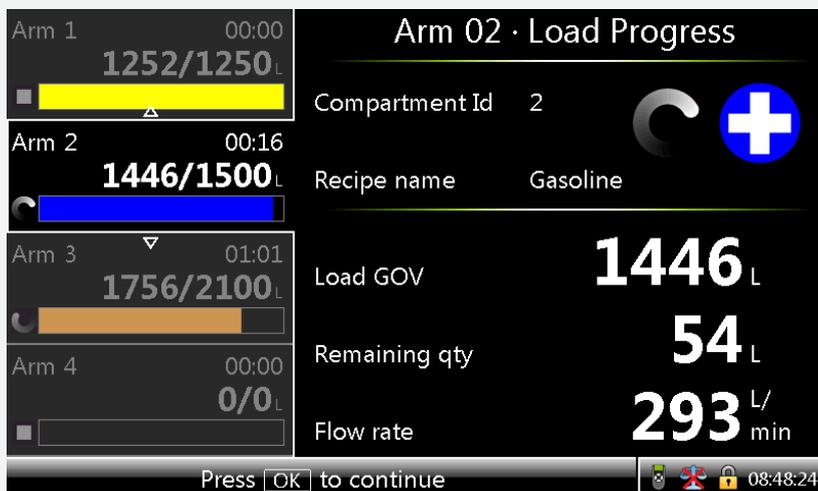
Loading Configurations

Straight Product Loading
– 1 to 6 arms simultaneous

Ratio & Side Stream Blending
– In addition to load arm assignments -
Up to 18 blend streams assigned per
device. Up to 6 blend streams assigned
per arm. Up to 3 blend streams used
simultaneously per batch.

Additive Injection
– In addition to load arm assignments –
Up to 36 internally controlled additive
injectors assigned per device. Up to 12
internally controlled additive injectors
assigned per arm. Up to 6 internally
controlled additive injectors used
simultaneously per batch.
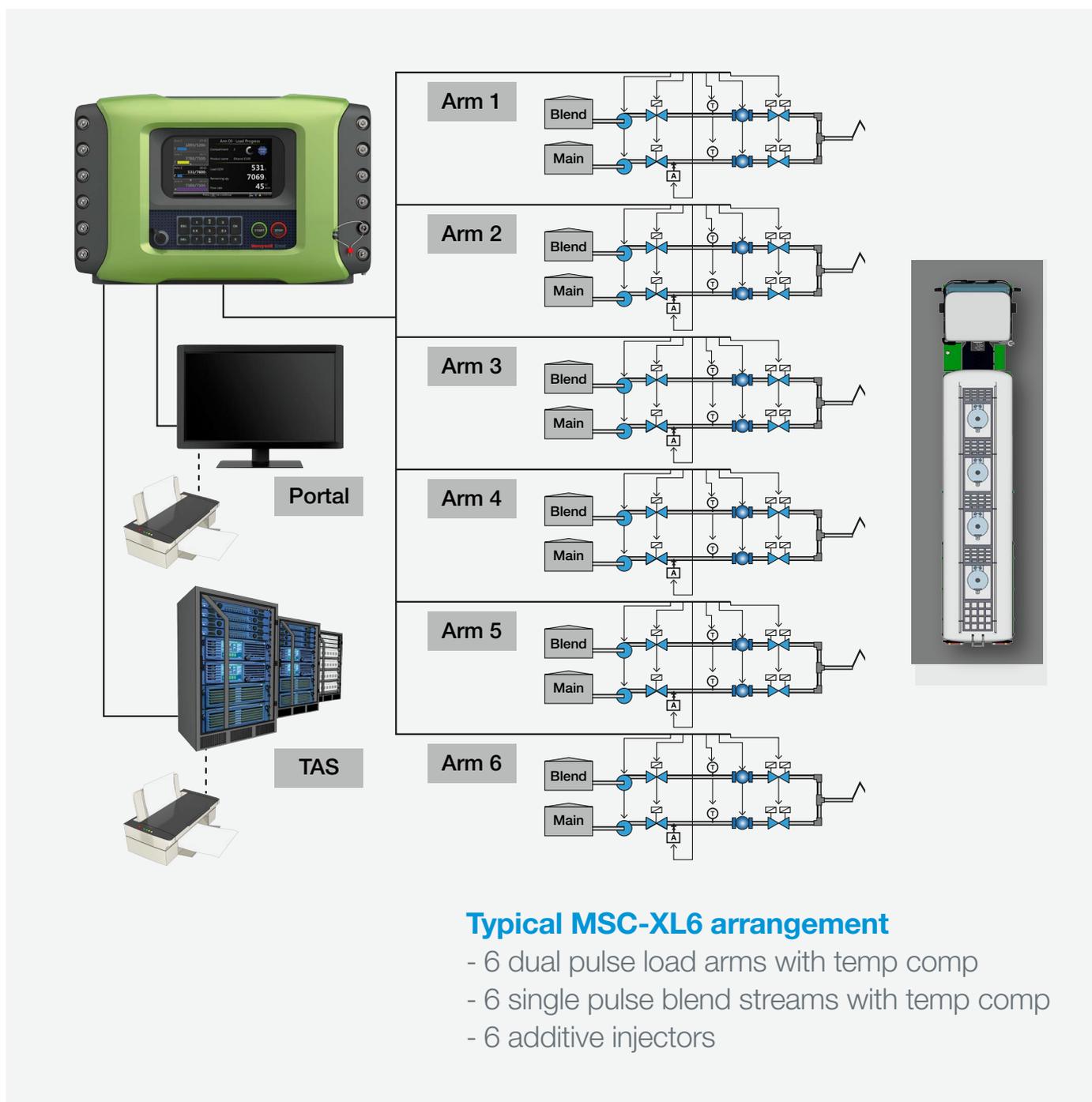
Typical MSC-XL6 arrangement
- 6 dual pulse load arms with temp comp
- 6 single pulse blend streams with temp comp
- 6 additive injectors

Licensing and I/O Tables

	MSC - L1 1 Load Arm +10 SPI Flexible Blend & Additive*	MSC - L2 2 Load Arms +8 SPI Flexible Blend & Additive*	MSC - L3 3 Load Arms +6 SPI Flexible Blend & Additive*		Hardware Back-Plane 1 1 CAN-PSF 1 CAN-HMI 1 CAN-ARM						
	Single Pulse Inputs (SPI) DI-DC available on unused S-PI	PO	DO-SSR	DO-EMR	DI-AC	DI-DC Also see SPI's	RTD	AI	AO	COMMS	ETHER
License L1 – L3 Standard I/O	12	2	12	0	2	0	3	7	1	5	2
Plus 1 CAN-IN-OUT	12	2	16	10	3	15	3	7	2	5	2
Plus 2 CAN-IN-OUT	12	2	20	20	6	30	3	7	3	5	2

Optional ↕

* Max 6 Blend per Arm

	MSC - XL1 1 Load Arm +22 SPI Flexible Blend & Additive*	MSC - XL2 2 Load Arms +20 SPI Flexible Blend & Additive*	MSC - XL3 3 Load Arms +18 SPI Flexible Blend & Additive*	MSC - XL4 4 Load Arms +16 SPI Flexible Blend & Additive*	MSC - XL5 5 Load Arms +14 SPI Flexible Blend & Additive*	MSC - XL6 6 Load Arms +12 SPI Flexible Blend & Additive*	Hardware Back-Plane 1 & 2 2 CAN-PSF 1 CAN-HMI 2 CAN-ARM				
	Single Pulse Inputs (SPI) DI-DC available on unused S-PI	PO	DO-SSR	DO-EMR	DI-AC	DI-DC Also see SPI's	RTD	AI	AO	COMMS	ETHER
License XL1 – XL6 Standard I/O	24	4	24	0	0	0	6	14	2	7	3
Plus 1 CAN-IN-OUT	24	4	28	10	3	15	6	14	3	7	3
Plus 2 CAN-IN-OUT	24	4	32	20	6	30	6	14	4	7	3
Plus 3 CAN-IN-OUT	24	4	36	30	9	45	6	14	5	7	3
Plus 4 CAN-IN-OUT	24	4	40	40	12	60	6	14	6	7	3

Optional ↕

* Max 12 Add, 6 Blend

Nine licenses available

- 3 standard (L) licenses (1 to 3 load arms)
- 6 enhansed (XL) licenses (1 to 6 load arms)

Each license permits the configuration of the appropriate number of load arms, plus, the user defined configuration of remaining SPI's as blend or additive streams, as required.

Technical Specifications

Approvals	MSC	
ATEX	II 2 G Ex d [ia] IIB T6 Gb	
IECEx	Ex d [ia] IIB T6	
FM	Class1 Div1 Group C&D T6	
CSA/C$_{UL}$	Class1 Div1 Group C&D T6	
CCOE	Ex d [ia] IIB T6	
INMETRO	Ex d [ia] IIB T6 Gb	

Environmental	ATEX/IECEx	FM/CSA
Operating Temperature	-40 ℃ to +65 ℃	-40 ℉ to +185 ℉
Storage Temperature	-40 ℃ to +85 ℃	-40 ℉ to +185 ℉
Protection Class	IP66	IP66
Humidity	5% - 95% Non-Condensing	5% - 95% Non-Condensing

Materials		
Enclosure	Aluminium, Anodized	Aluminum, Anodized

Connections		
Cable entries	6xM40, 6xM32, 2xM20	4x 1¼" NPT, 4x 1" NPT

Electrical		
Voltage	88 to 264 Vac	88 to 264 Vac
Flow Meter Inputs	24 x 5 kHz input Configurable as 12 dual PI	24 x 5 kHz input Configurable as 12 dual 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
Analog Inputs (max)	14	14
Analog Outputs (max)	6	6
RTD's (max)	6	6
RS 485 Comms Ports (max)	7	7
Ethernet Ports	3	3

Interfacing	
Serial Protocols	FlexConn, Modbus RTU, Slip+, FMC Smith
Ethernet Protocols	FlexConn TCP/IP, Modbus TCP/IP
Display	8" Super WVGA color TFT LCD screen
Languages	English (US), English (UK), French, German, Spanish, Dutch, Chinese (simplified), Japanese, Polish, Italian, Portuguese, Swedish, Thai, Russian, Arabic, Brazilian Portuguese and Turkish
Handheld Devices	Fusion4 LAD (local access device), Fusion4 IR Controller (Infra Red)

Weights		
MSC-L	approx 53 kg	approx 115 lb

# Accessories

Part Number	Descripton
323-1392002	Fusion4 LAD FM (Local Access Device)
323-1392003	Fusion4 LAD CSA (Local Access Device)
323-1392004	Fusion4 LAD ATEX & IECEx (Local Access Device)
10-31052	Fusion4 IR Controller (UL)
10-31052-F4	Fusion4 IR Controller (ATEX)
10-31052-F4X	Fusion4 IR Controller (IECEx)

Identification Code | Availability

CV 1-6 Model Key

H	E	L	C	8	3	Fusion4 MSC-L METRIC	↓	
H	E	L	C	8	7	Fusion4 MSC-L NPT		↓

CV 7 Enclosure

A	MSC Enclosure	•	•

CV 8 Firmware

L	MSC Enclosure	•	•

CV 9 Licences & I/O
Pos 1 Licences

A	MSC-L1	•	•
B	MSC-L2	•	•
C	MSC-L3	•	•
D	MSC-XL1	•	•
E	MSC-XL2	•	•
F	MSC-XL3	•	•
G	MSC-XL4	•	•
H	MSC-XL5	•	•
J	MSC-XL6	•	•

Pos 2 I/O

0	Not Requested	•	•
1	1 x CAN-IN-OUT board	•	•
2	2 x CAN-IN-OUT board	•	•
3	3 x CAN-IN-OUT board	b	b
4	4 x CAN-IN-OUT board	b	b

CV 10 Mounting Options

0	Not Requested	•	•

CV 11 Field Entry Plugs and Breather
Pos 1 Breather

0	Not Requested	•	•
A	Breather	•	•

Pos 2 Field Entry Plugs

0	Not Requested	•	•
1	4 x M32 & 4 x M40 Exd Blanking plugs (half)	•	
2	7 x M32 & 8 x M40 Exd Blanking plugs (full)	•	
3	FM Full Set - 4 x 1¼", 4 x 1" Exd Blanking Plugs		•

CV 12 Ex Approvals

A	ATEX	•	
B	IECEx	•	
C	CCOE (India)	•	
E	FM		•
F	CSA		•
G	INMETRO	•	•

CV 13 Authorization Device

0	Not Requested	•	•
1	Nexwatch DR4208 – Proximity Card Reader	•	•

H	E	L	C	8	3	A	L	A	1	0	0	2	B	0	Atex Sample Modelling Code
H	A	L	C	8	7	A	L	A	1	0	A	3	E	0	FM/UL Sample Modelling Code

General Arrangement Drawings

132   260

180

85

4 X M10x1.5
(REAR MOUNTING HOLES)

321

344

75   133

2 X M10x1.5
(BOTH SIDES)

525

490

1/2" NPT BREATHER/ DRAIN

4 X 1-1/2" NPT

4 X 3/4" NPT

EARTHING LUG X 2

MSC-L NPT ASSY

1/2" NPT BREATHER/ DRAIN

6 X M32x1.5

6 X M40x1.5

2 X M20x1.5

EARTHING LUG X 2
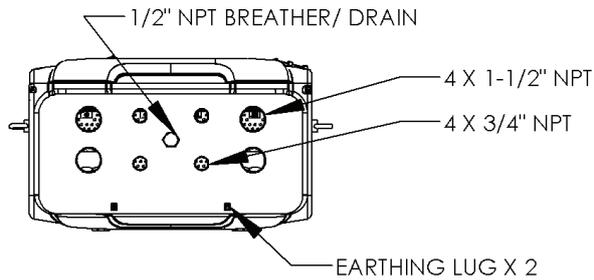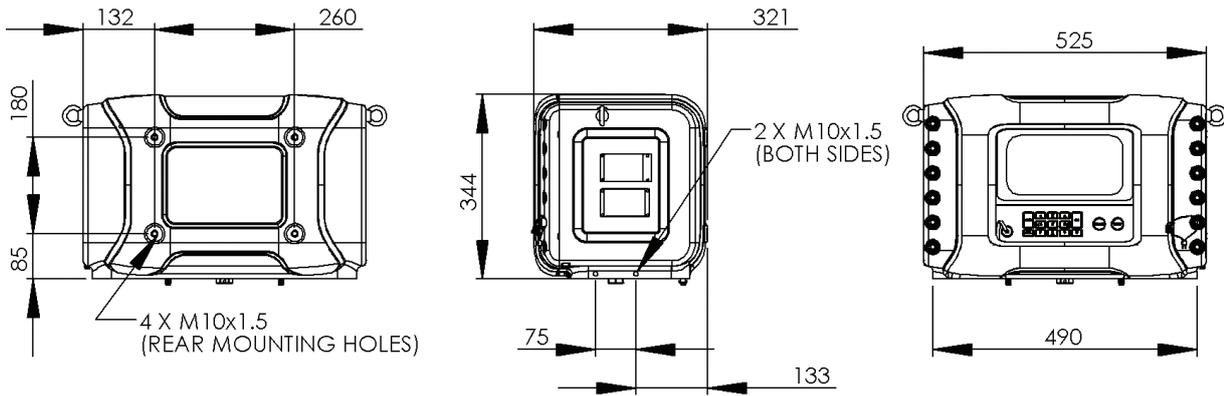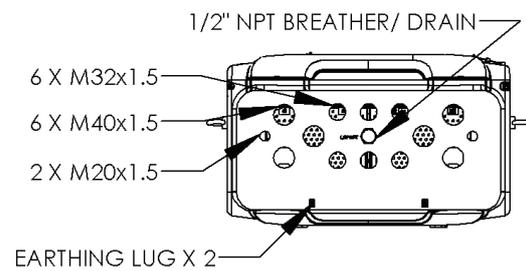
MSC-L METRIC ASSY

For More Information

To learn more about Honeywell Enraf's Fusion4 solutions, visit www.honeywellprocess.com/fusion4 or contact your Honeywell Enraf account manager.

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