Matrix® 3
Fluid Management Systems

Automated, Wireless Oil Dispense Tracking and Bulk Tank Monitoring

Dispense meters, software, and wireless devices capture dispense history and monitor petroleum and synthetic oil products and anti-freeze mixture inventory levels.

Premier software
256634

Features and Benefits

- Wireless transmission and reception of meter and tank level information make it simple to track your entire facility's activities
- Customize to fit your business–three product platforms (Basic, Professional, and Premier) to fit any size facility
- Multi-level security to protect your assets
- Precise measurement and control of fluids ensures profits and eliminates out of stock issues for critical inventory
- ADP and Reynolds & Reynolds interfaces provide secure, reliable, data transfer between the Matrix database and the dealership management software

Matrix Meter
256282

Typical Applications

- Auto dealerships
- Heavy-duty fleet service
- Off-road maintenance shops
- Industrial in-plant lubrication

Transceiver
257464

Typical Fluids Handled

- Petroleum- and synthetic-based oils
- Anti-freeze

Tank Level Monitor
256285

Matrix Application Features

Feature	Basic	Professional	Premier
Maximum Number of Transceivers	1	2	8
Maximum Number of Meters	30	100	300
Maximum Number of Tank Monitors	0	12	50
Client PC Networking	0	6	300
Number of users	250	500	1000
Track Dispense by Work Order	X	X	X
Track Dispense by Technician			X
Track Dispense by Vehicle Number			X
Tank Level Email		X	X
Third Party Interface Capable		X	X
ADP® Certified Interface			X
Reynolds® Certified Interface			X
No fluid limitations with any Matrix Platform			

Pump Air Control
247436

FOR SALE TO AUTHORIZED DISTRIBUTORS ONLY

Matrix® 3
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Software System Operating Requirements

Matrix software can be configured as a stand-alone PC or networked to multiple PC's. This software is not compatible with Apple® Computers, and is not available for the Apple® Operating system. The PC requirements for the Matrix Server and Matrix Client or shop PC's are noted below.

Server PC Hardware Requirements

- Windows® XP Professional or Vista® operating system
- Pentium® 4 or better processor
- Processor speed of 3.0 GHz or better
- RAM memory of 1 GB or better
- CD-RW or DVD/RW drive
- Serial port configuration for (1) RS422 and (1) USB connection

PC Clients

- Windows® XP Professional or Vista® operating system
- Pentium® 4 or better processor
- Processor speed of 2.0 GHz or better
- RAM memory of 1 GB or better

Software Instruction Manuals

Basic 313104
Professional 313106
Premier 313108
ADP 313112
Reynolds & Reynolds. 313114

RF Communication (Meters, Transceivers, Tank Level Monitors, Pump Air Control)

Description	Performance
RF Communication	2.4 GHz Direct Sequence Spread Spectrum
RF Communication Range	Unobstructed: 300 to 500 ft (91 to 152 m); Obstructed: 250 to 300 ft (76 to 91 m)
RF Temperature Range	-40° F to 185° F (-40° C to 85° C)
Approvals	FCC, Industry Canada (IC), C-Tick, CE

Ordering Information

System Software	
256634	Premier Software CD (includes 3rd party interface)
256635	Professional Software CD
256636	Basic Software CD
256637	Premier Software with ADP Interface
256638	Premier Software with Reynolds & Reynolds Interface
Transceiver and Connection Hardware	
257464	Transceiver with Universal Power Adapter (CE)
255731	USB/RS422 Converter
15T999	15 ft USB Cable
15T998	3 ft USB Cable
119572	RS422 Bulk Wire (1000 ft roll)

257464

Transceiver and Connection Hardware Technical Specifications

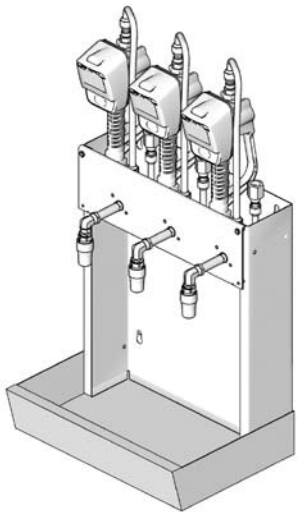
Weight . . . . . 1.0 lb (454 grams)
Power Supply . . . . . 100 – 240 V, 50/60 Hz to 12 VDC plug-in transformer
Instruction Manual 313008

Matrix® 3
Fluid Management Systems

Matrix Meter and Accessories

Matrix Electronic Meter with Extension, 5 gpm or Less		
256282	1/2 in npt(f) swivel, rigid extension and standard automatic non-drip quick-close nozzle for oil	
256482	1/2 in npt(f) swivel, flexible extension and standard automatic non-drip quick-close nozzle for oil	
256483	1/2 in npt(f) swivel, gear lube extension and standard quick-close nozzle	
256484	1/2 in npt(f) swivel, rigid extension and standard quick-close nozzle for anti-freeze	
256485	1/2 in npt(f) swivel, flexible extension and standard quick-close nozzle for anti-freeze	
Matrix Electronic Meter with Extension, 14 gpm or Less		
256486	1/2 in npt(f) swivel, rigid extension, high flow, quick-close nozzle for oil	
256487	1/2 in npt(f) swivel, flexible extension, high flow, quick-close nozzle for oil	
256488	3/4 in npt(f) swivel, rigid extension, high flow, quick-close nozzle for oil	
257120	3/4 in npt(f) swivel, flexible extension, high flow, quick-close nozzle for oil	
Swivel Covers		
15T366	Black swivel cover (standard color with meter)	
15T367	Red swivel cover	
15T368	Blue swivel cover	
15T369	Green swivel cover	
15T370	Yellow swivel cover	
Accessories		
15B750	16 gallon and 55 gallon meter mounting bracket	
249440	Console bracket	
257539	Matrix meter for oil bar (swivel and extension removed)	Instruction Manual 313013
256719	Oil bar console–complete cabinet without piping and meters	
255370	Oil bar kit (fittings, nozzles, and piping)	
257556	Retro fit kit–mount Matrix meter in 222107 console	
Filter Kits for Matrix Meters		
255885	Filter kit includes (10) filters/strainers (15M308), (10) spacers (15M309) and (10) O-rings (155332)	

Matrix Meter 256282



Oil Bar

Components ordered separately. For complete unit, order oil bar 256719, kit 255370 (one per meter) and Matrix meters (257539) as needed

Technical Specifications

Flow Range [1]	0.1 to 14 gpm (0.4 to 53 lpm)
Maximum Working Pressure	1500 psi (103.4 bar)
Operating Fluid Pressure Range	100 – 1500 psi (7–103 bar, 0.7–10.3)
Weight (with battery and rigid nozzle extension)	6.07 lbs (2.75 kg)
Units of Measurement	Programmable in pints, quarts, gallons, or liters
Inlet	3/4 in–14 npt or 1/2 in–14 npt
Outlet	3/4 in–16 straight thread O-ring Boss
Maximum Totalizer	999,999 gallons or liters
Maximum Recorded Dispense	999.9 Units
Maximum Pre-Set Volume	999.9 Units
Storage Temperature Range	-40–158º F (-40-70º C
Operating Temperature Range	4–158º F (-20-70º C
Battery	4 AA alkaline or 4 AA lithium
Battery Life [3]	Preset Models–six months, manual models–one year
Wetted Parts	Aluminum, sst, pbt/pc, nitrile rubber, cs
Fluid Compatibility	Petroleum- and synthetic-based oils and anti-freeze mixtures (not compatible with fuel and windshield washer fluid)
Meter Pressure Loss [1]	180 psi (12 bar) @ 14 gpm (53 lpm)
Accuracy [2]	± 0.5%
Repeatability [2]	±0.15 %
Dimension w/o Extension	13 in L x 3.75 in W x 5.75 in H, (33 cm x 9.5 cm x 14.6 cm)
Instruction Manual	313046

1. Tested in 10W oil at 70º F. Flow rates vary with fluid pressure, temperature, viscosity, inlet fitting and nozzle type.
2. At 2.5 gpm (9.5 lpm) @ 70º F (21º C) with 10 wt. oil and 1 gal (3.8 l) dispensed. May require re-calibration. Out-of-box accuracy ±1.25%.
3. Average shop use with alkaline batteries (included); 30-35% longer life with lithium AA

Matrix® 3
Fluid Management Systems

Tank Level Monitor

Choose one TLM for each bulk fluid tank. Tank readings are automatic for used or new oil and anti-freeze products.

Tank Level Monitor	
256285	Tank Level Monitor

Tank Level Monitor
256285

Technical Specifications

Ultrasonic Tank Depth Measurement Range . . . . . 0 – 30 ft. (0-9 m) (Not recommended for use with pressurized tanks)
Fluid Level Measurement Accuracy* . . . . . ± 0.5%
Weight . . . . . 2.34lb (1.06 kg)
Operating Temperature Range . . . . . -22° F - 122° F (-30° C - 50° C)
RF Operating Temperature Range. . . . . -40° F - 185° F (-40° C - 85° C)
Storage Temperature Range. . . . . -40° F - 185° F (-40° C - 85° C)
Ambient temperature range** . . . . . -22º F - 122º F (-30º C - 50º C)
Batteries. . . . . (2) 9 VDC Alkaline only
Vertical Tanks . . . . . .Maximum volume: 999,999 gallons or liters, maximum height: 30 ft (360 in.)
Cylindrical Tanks . . . . . .Maximum volume: 999,999 gallons or liters, maximum diameter: 30 ft (360 in.)
Approvals . . . . . FCC, Industry Canada (IC), C-Tick, CE
Instruction Manual 312964

Note: Do NOT use the Matrix Tank Level Monitor with gasoline, diesel fuel, or other flammable liquids, and materials with an auto ignition temperature below 419º F (215º C)

* The difference in air temperature between the inside and outside of the tank may affect the accuracy of fluid levels
** Display will not function below 32º F (0º C)

Pump Air Control

One PAC required for each air pump. For safety and increased security, the PAC is a must have to maximize your fluid management system. Designed to supply air to the pump only when Matrix authorizes the dispense.

Pump Air Control (PAC)	
247435	23 scfm valve
247436	93 scfm valve

Pump Air Control
247436

Technical Specifications

Operating Pressure Range. . . . . 23-145 psi (1.7 - 10 bar)
Maximum Air Flow . . . . . 247435 - 23 SCFM (0.7m^3/min), 247436 - 93 SCFM (2.6m^3/min)
Power Supply . . . . . 120-240 VAC line voltage, 24VDC solenoid
Output Power . . . . . .10mW - 100mW
AMPS. 1A
Frequency . . . . . 50/60 Hz
Operating Temperature Range* . . . . . 32° F - 122° F (0° C - 50° C)
Enclosure Type . . . . . NEMA Type 3
Weight . . . . . 247435 - 2.8 lbs (1.27 kg), 247436 - 3.4 lbs (1.5 kg)
Instruction Manual 312417

* The difference in air temperature between the inside and outside of the tank may affect the accuracy of fluid levels. Display will not function below 32º F (0º C).

Tank Accessories

CleanLine Filter Assemblies	
248421	900 psi tank mount CleanLine™ filter assembly (includes thermal relief)
248418	900 psi wall mount CleanLine filter assembly (includes thermal relief)
248419	1800 psi tank mount CleanLine filter assembly
248417	1800 psi wall mount CleanLine filter assembly
Replacement Filters	
15D702	900 psi CleanLine screw-on type filter
119278	1800 psi CleanLine filter element

Horizon™
Fluid Management System

Features and Benefits

- Allows multiple technicians to dispense simultaneously
- Easily configured and expandable for any facility
- Increases technician productivity
- Password-protected to prevent unauthorized dispensing
- Tracks inventory levels and alerts operators to low inventory conditions to minimize out-of-stock situations

Typical Applications

- Bulk-dispensing to multiple service bays
- Automotive dealerships
- Heavy-duty dealerships
- Fleet service facilities

Typical Fluids Handled

- Petroleum- and synthetic-based oils
- Anti-freeze

Technical Specifications

System Specifications

Control Modules on a System (1 Master only, plus 39 Slaves) ..... 40 maximum
Keypads on a System (1 keypad per Control Module) ..... 40 maximum
Solenoids on a System (40 Control Modules, 6 ports each) ..... 240 maximum
Meters on a System (40 Control Modules, 6 ports each) ..... 240 maximum
Fluids on a System ..... 10 maximum
Dispense Areas (reel banks) ..... 99 maximum
Operator Names / PIN Numbers ..... 100 maximum
Dispense Records Stored ..... 668 maximum
Simultaneous Dispenses (same and/or different fluids): ..... 12 maximum
Jobs Waiting in Queue ..... 12 maximum
Printer per System OR Attached Computer per System ..... 1 maximum
(either must be connected to Master Control Module)
Accuracy of System ..... ±0.6%

Control Module Ports

Solenoid Ports (air or fluid) per Control Module 6
Pulse Meter Ports per Control Module 6
Port for Keypad per Control Module 1
Port for Printer or Computer per Master Control Module 1

Voltage Input

90-120 Volts AC, 50/60 Hz, single phase, 2 amps maximum draw
208-240 Volts AC, 50/60 Hz, single phase, 1 amp maximum draw
Operating Temperature Range ..... 40 - 140º F (4 - 60º C) ambient

Pre-set or Free-flow Options

Maximum Preset or Free-Flow Dispense ..... 999.9 units
Minimum Preset Dispense ..... 0.5 units

Units of Measure

Dispense ..... liters, quarts, gallons or pints (configurable for each fluid)
Inventory ..... liters or gallons (dependent upon dispense units chosen)

Maximum Cable Lengths

From Keypad to Control Module ..... 50 ft (15.3 m)
From Solenoid to Control Module ..... 50 ft (15.3 m)
From Pulse Meter to Control Module ..... 50 ft (15.3 m)
From Printer/Computer to Master Control Module ..... 50 ft (15.3 m)
From one end of the Control Module Network to the other end (daisy-chained) .....
..... 2000 ft (610 m)

Reference Data

Instruction Manual 308607

Horizon™
Components and Accessories

Ordering Information

Control Module drives air and fluid solenoids, and counts pulses from meters. On-board memory contains a map of available system resources, and a power supply that supports both 120 and 240 Volt AC operation. Combine one Master Control Module with up to 39 Slave Control Modules per system.	
238624	Master Control Module (one per system)
238625	Slave Control Module (up to 39 per system)
Keypads: Basic, Enhanced and Administrative	
113551	Basic Keypad for navigating through the Horizon's menus
113553	Administrative Keypad is needed to set up and make changes to the system parameters
191368	Keypad Wall-Mounting Bracket
Air Solenoids open and close the air supply to the fluid pump air motor. Each solenoid can be up to 50 ft (15.3 m) from a Control Module. Up to 6 solenoids (air or fluid) can be connected to each Control Module.	
215407	For pumps requiring normal air flow (Mini Fire-Ball 225, 3:1 and Fire-Ball 300, 5:1)
512926	For pumps requiring higher air flow (Fire-Ball 425, 6:1 and 3:1)
Fluid Solenoids start and stop the fluid dispense cycles. These must be placed at each dispense point for each fluid being dispensed. Each fluid solenoid can be up to 50 ft (15.3 m) from a control module. Up to 6 solenoids (either air or fluid) can be connected to each control module. The low-flow model is available in a kit with a ready light which alerts the operator when the job is ready to dispense.	
215487	Low-flow: supports 3 gpm (11.4 lpm)
512927	Higher-flow: supports up to 6 gpm (22.7 lpm)
514150	Anti-Freeze Solenoid
218588	Low-flow Solenoid with Ready Light Kit
238996	Ready Light Kit (only; less the solenoid)
Pulse Meters measure fluid flow to dispense points and send a train of pulses back to the Control Modules which are counted to determine how much fluid has been dispensed. If there are multiple meters for a single fluid, check valves (111620) should be placed in series with each meter to prevent "cross talk" and oscillations. Pulse Meters can be used for either U.S. or metric units.	
238618	For oils, gear lube, automatic transmission fluid
215474	For anti-freeze
111620	Check Valve, 1/2 in
Thermal Relief Kits	
235998	600 psi (41 bar)
102527	Thermal Relief Valve, 900 psi (62 bar)
237893	900 psi (62 bar)
240429	1600 psi (110 bar)
System Printer prints job tickets after each dispense is complete, plus has save function for later analysis	
113774	Printer
514037	Printer paper, 1 roll
Keypad or Printer Cables	
191393	25 Ft (7.6 M) cable with connectors
191394	Cable with connectors. 50 Ft (15.3 M)
Control Module Network	
113559	500 Ft (152.5 M) bulk cable
113560	1000 Ft (305 m) bulk cable
Pulse Meter Cable	
113555	Length: 500 ft (152.5 m)
113556	Length: 1000 ft (305 m)
Solenoids Cable	
113557	Length: 500 ft (152.5 m)
113558	Length: 1000 ft (305 m)
Computer Cable with Connectors	
192873	Computer I/O 25 ft (7.6 m)
192874	Computer I/O 50 ft (15.3 m)

238624

113553 *113551*


215407

215487


113774

238618

Fluid Commander™
Fluid Management System

Features and Benefits
- Provides increased accuracy over mechanical counters
- PIN code prevents unauthorized dispensing
- Dispense totals tracked by location
- Easy to read display
- Accurate controlled dispense with parts room authorization

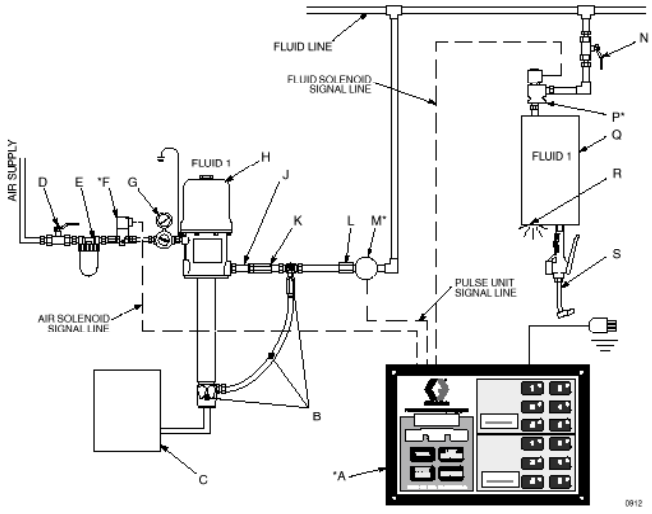
Typical Applications
- Parts room authorized dispensing for inventory control
- Automotive dealerships
- Heavy-duty dealerships
- Fleet service facilities

Typical Fluids Handled
- Petroleum- and synthetic-based oils
- Anti-freeze

Technical Specifications
Maximum Number of Fluids ..... 1 or 2
Dispense Stations/Bays ..... 6 or 12
Air Solenoids Required ..... 1 (per pump)
Fluid Solenoids Required ..... 1 (per fluid dispense station)
Electrical Requirements ..... 120 V, 60 Hz, .25 amps
Weight ..... 4 lb, 5 oz. (8.0 kg)
Wiring Requirements 90V; 2-wire
Distance/Gauge .....200 ft (61 m) = 18 gauge, 201 to 500 ft (61 m to 152 m) = 16 gauge, ...501 ft (152 m) or more = 14 gauge
Instruction Manual 308238

Easy to Use
1. Service technician enters the service bay number, type of product, and amount to be dispensed, then activates the dispense button.
2. A “ready” light (located on the hose reel or dispense bar of the target service bay) signals when dispensing can begin.
3. As fluid is dispensed, the Fluid Commander tallies the amount dispensed and shuts-off when the pre-set amount is reached. No further dispensing takes place until new dispensing data is entered.

Typical Fluid Commander System Layout



A. Control*
B. Pressure Relief Kit**, 237893, 1-1/2 npt (m x f)
C. Supply Tank
D. Air Shutoff Valve, bleed-type
E. Air Filter
F. Air Solenoid Valve, 215407*
G. Air Regulator, 202156
H. Pump
J. Flexible Hose, 3-6 ft (0.9-1.8 m) long
K. Check Valve, 111620 (required)*
L. Fluid Filter, 223179
M. Pulse Meter, 236763 or 236764
N. Fluid Shutoff Valve, 108458, 1/2"
P. Fluid Solenoid Valve***, 215487*
Q. Hose Reel
R. Ready Light, 238996***
S. Dispense Valve

These parts are included with model 232076, 240448, or 241905
***Kit required to protect system from rupture due to thermal expansion of fluid lines. See instruction manual 308403.*
****218588 includes 238996 and 215487.*
Note: For tank packages, pressure reliefs from instruction manual 308403 must be installed on outlet with pressure going either back to vent into the tank or to a container installed under the exit or relief valve.
† Required to ensure meter accuracy.