TraffiClair

ClairLup Product Presentation

ClairLup Inductive Loop Detectors for Traffic Control & Car Park Counting

Sales@Trafficlair.com
Sales@DYMEC.com

DYMEC
AMERICAN INDUSTRIAL

TraffiClair

ClairLup Inductive Loop Detectors

For Traffic Control and Car Parking Counting

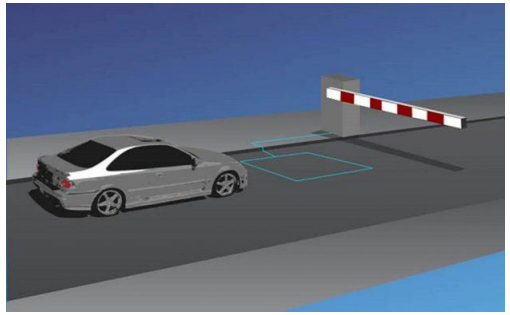
- Response time <10ms
- Interference resistance
- Anti-lock algorithms
- Advanced detection algorithms



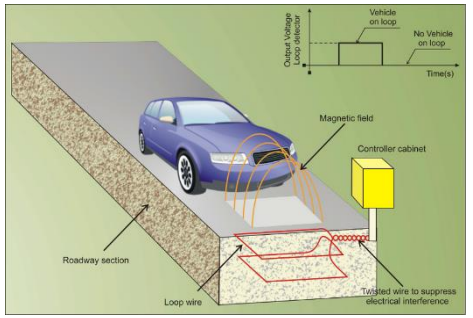
- Fast fundamental frequency refresh
- Adaptive to a wide inductive range
- Real-time waveform display
- Capture rate > 99.9%

Pros & Cons of loop detector









Pros	Cons
• Design flexible to meet most application requirements. • Technically mature and reliable. • Rich in application cases and experience. • Capable of detecting fundamental traffic data, including presence, flow, occupancy, speed, headway, and spacing between vehicles. • Minimal impact from weather conditions, unaffected by rain, snow, or fog. • Compared to other technologies, it offers high-precision fixed-point detection data. • Typically used as a standard reference for benchmarking detection data. • Can utilize detection fingerprints for vehicle classification.	• Requires road surface cutting for construction. • Improper construction can damage the road's lifespan. • Construction and maintenance require road closures. • Overloaded vehicles and environmental temperature affect loop strength. • Multiple loops are needed to achieve continuous position detection. • Poor vehicle type detection capability.

TraffiClair

Application scenarios





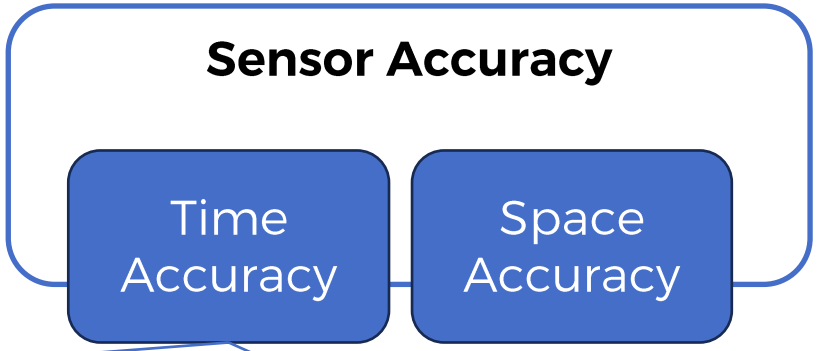








Response time <10ms



1. Time resolution of detection equipment sensing and data acquisition (e.g., frame rate)

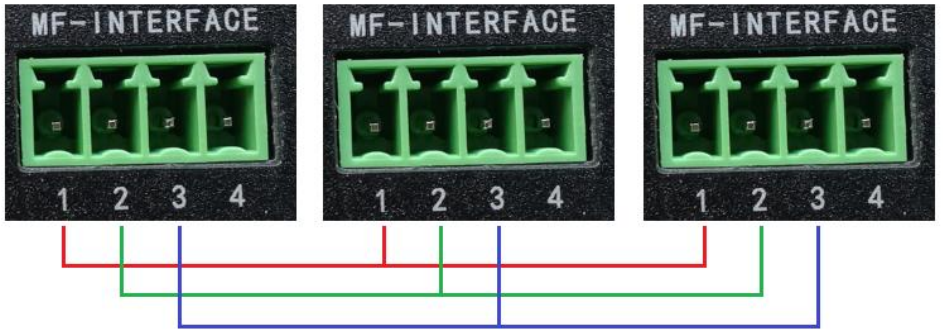
2. **Sensor response time**

TraffiClair	Response Time	Others
ClairLup-V1	10ms	Ranges from 24ms to 100ms.
ClairLup-V2	10ms	
ClairLup-V4	8ms	
ClairLup-V6	10ms	
ClairLup-V8	5ms	
ClairLup-V4F	3ms	
ClairLup-V8F	3ms	

The response time of TraffiClair's products is less than 10ms,
whereas similar products in the market typically have response times ranges from 24ms to 100ms.
This implies that TraffiClair's sensors **offer superior accuracy** compared to the market's standard products and **support reliable detection for higher vehicle speeds.**

For example: Average car length: 4m, 4m/100ms=144km/h, means while the response time is 100ms, it will not be able to detect a 4m car to pass it with a speed higher than 144km/h.

Interference resistance

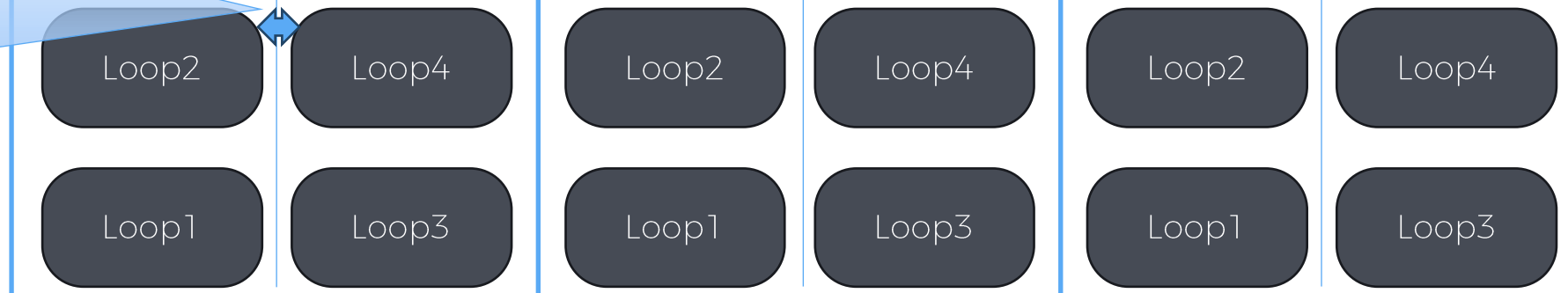


Cascading

Supports close placement of loops, with a loop-to-loop distance of less than 10cm.

Polling mode within one device avoiding interference

When multiple devices are cascaded, the loops of different devices can effectively avoid interference.



Detector 1
ID: 00

Detector 2
ID: 01

Detector 3
ID: 10

Much more efficient compared with frequency bands separation.

TraffiClair

Anti-lock algorithms

When the vehicle's state remains unchanged, it could either mean the vehicle hasn't moved at all or **there might be a deadlock.**



To resolve the deadlock

Other products:

By artificially setting a holding time, it forcibly compels the device to change its presence status after a certain period of time. However, if a vehicle is indeed parked there continuously, it can lead to false alarms.

Our solutions:

Utilizes advanced intelligent anti-lock algorithms to ensure long-term, maintenance-free operation. No need to set a holding time at all.

The determination is made based on the vehicle's deviation over a period of time and whether there are other vehicles entering.

TraffiClair

Advanced detection algorithms

Using advanced intelligent detection algorithms to achieve accurate detection in various complex scenarios.



High Ground Clearance

Supports reliable detection of large vehicles, trailers, and high-ground-clearance vehicles.



Reinforcing Steel Mesh

Addressed the challenge of detecting on steel-reinforced road surfaces.



Crossing Lanes

Resolved the issue of interference between adjacent loops, allowing for close loop placement.

TraffiClair

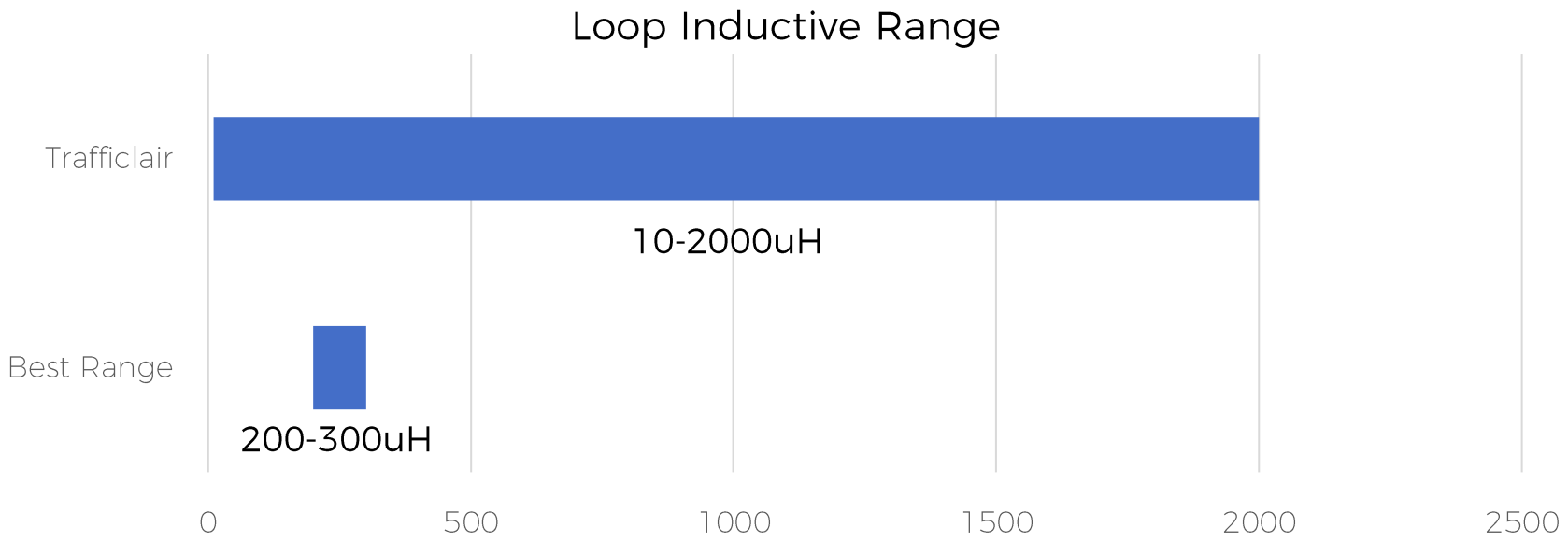
Fast fundamental frequency refresh

- To ensure long-term reliable operation, the fundamental frequency is automatically adjusted according to the environmental conditions.

Temperature-Dependent Inductance	Frequency Drift	Environmental Temperature Instability
• The inductance of a loop typically changes with temperature. As temperature increases, the inductance decreases. This means that the loop's resonant frequency also changes accordingly.	• Due to the temperature dependence of inductance, the reference frequency of the loop experiences frequency drift, which may lead to the loop no longer resonating at the desired frequency.	• Environmental temperatures are not always stable, especially in outdoor or extreme conditions. Rapid temperature changes can lead to more significant frequency drift in the loop.

Adaptive to wide inductance range

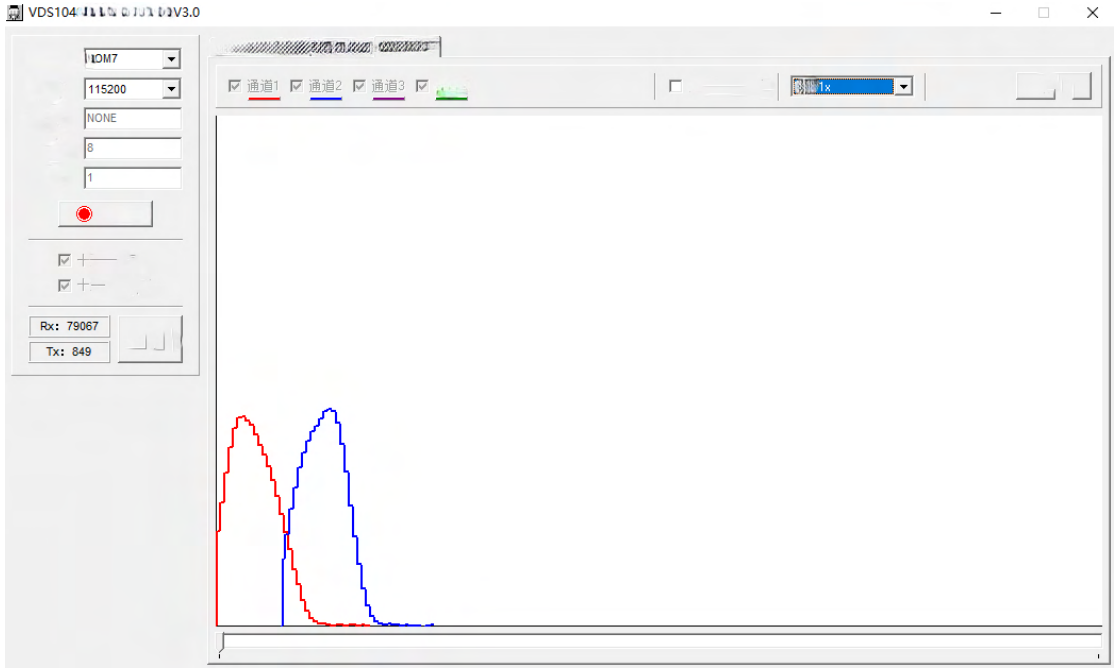
- ClairLup supports much wider loop inductance range
- The oscillating circuits can operate stably with wide range of loop inductance values and the impact on detection sensitivity may be minimal



TraffiClair

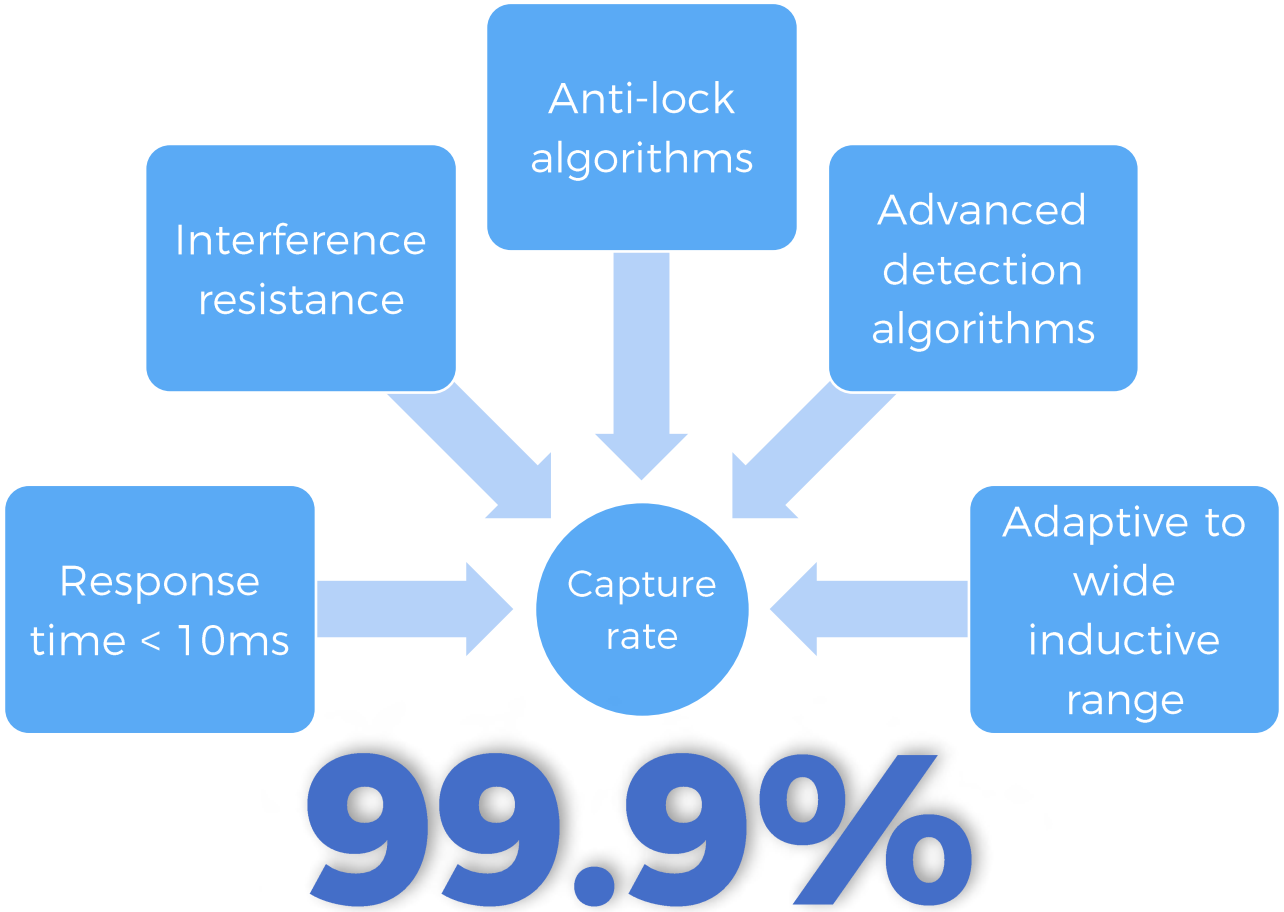
Real-time waveform output

Configuration Management Client is provided for parameter setting & query, serial output data display and waveform display functions.



- **The real-time waveform display interface** records the changes in inductance as vehicles pass through the respective loops. By continuously monitoring the waveforms as vehicles pass over the loops, **it greatly facilitates on-site issue analysis and location tracking**. Installation problems and environmental issues become readily apparent.

Capture rate >99.9%



Statistical data based on real project data from tens of thousands of passing vehicles.

Ordering options

ClairLup-V1	ClairLup-V2	ClairLup-V4	ClairLupV6	ClairLupV8
				
• 1-channel detector • Presence detection • Cascading for interference resistance • Response time < 10ms • Anti-lock algorithms • Real-time waveform display • Detection of loop open and short circuits • I/O and RS485 output with customizable data protocols • Capture rate 99.9%	• 2-channel detector • Presence & direction detection • Cascading for interference resistance • Response time < 10ms • Anti-lock algorithms • Real-time waveform display • Detection of loop open and short circuits • I/O and RS485 output with customizable data protocols • Capture rate 99.9%	• 4-channel detector • Presence & direction detection • Cascading for interference resistance • Response time < 8ms • Anti-lock algorithms • Real-time waveform display • Real-time loop fault detection and recovery operation • I/O and RS485 output with customizable data protocols • Capture rate 99.9%	• 6-channel detector • Presence & direction detection • Cascading for interference resistance • Response time < 10ms • Anti-lock algorithms • Real-time waveform display • Real-time loop fault detection and recovery operation • I/O and RS485 output with customizable data protocols • Capture rate 99.9%	• 8-channel detector • Presence detection • 32-bit ARM processor & FPGA coprocessor • Cascading for interference resistance • Response time < 5ms • Anti-lock algorithms • Real-time waveform display • Real-time loop fault detection and recovery operation • I/O and RS485 output with customizable data protocols • Capture rate 99.9%

Ordering options

ClairLup-V4F



- 4-channel detector
- Flow detection
- 32-bit ARM processor & FPGA coprocessor
- Cascading for interference resistance
- Response time < 3ms
- Anti-lock algorithms
- Real-time waveform display
- Real-time loop fault detection and recovery operation
- I/O and RS485 output with customizable data protocols
- Capture rate 99.9%

- Traffic flow data
- Vehicles per Lane, Range: 0 to 65535
- Lane Occupancy, Range: 0% to 100%
- Average Vehicle Speed, Range: 0 to 255 km/h
- Average Inter-Vehicle Gap, Range: 0 to 65535 meters
- Average Headway Time, Range: 0 to 65535 seconds
- Percentage of Following Vehicles, Range: 0% to 100%

ClairLup-V8F



- 8-channel detector
- Flow detection
- 32-bit ARM processor & FPGA coprocessor
- Cascading for interference resistance (2 devices only)
- Response time < 3ms
- Anti-lock algorithms
- Real-time waveform display
- Real-time loop fault detection and recovery operation
- I/O and RS485 output with customizable data protocols
- Capture rate 99.9%

- Traffic flow data
- Vehicles per Lane, Range: 0 to 65535
- Lane Occupancy, Range: 0% to 100%
- Average Vehicle Speed, Range: 0 to 255 km/h
- Average Inter-Vehicle Gap, Range: 0 to 65535 meters
- Average Headway Time, Range: 0 to 65535 seconds
- Percentage of Following Vehicles, Range: 0% to 100%

Benchmark

	Features	ClairLup-V4	FEIG VEK-M4	NORTECH TD664E	Note
1	Auto-tuning	Supported	Supported	Supported	Loop malfunction repair or automatically entering normal operating state when parameters change
2	Sensitivity adjustment	8-level of sensitivity	256-level of sensitivity	8-level of sensitivity	
3	Loop frequency adjustment	4-level frequency adjustment	5-level frequency adjustment	8-level frequency adjustment	ClairLup supports cascading to solve interference between loops. In practical applications, loop frequency adjustment is generally not required.
4	Response time	Less than 10ms	Greater than 24ms (with noise filtering enabled, greater than 48ms)	Around 35ms	Fast response time supports reliable detection at higher vehicle speeds
5	Existence time	No need for configuration	1 to 255 minutes and infinite	3.5 seconds, 4 minutes, 40 minutes, infinite	ClairLup supports intelligent anti-lock algorithm, no need to set existence time, and can more accurately reflect the vehicle's presence on the loop.

Benchmark

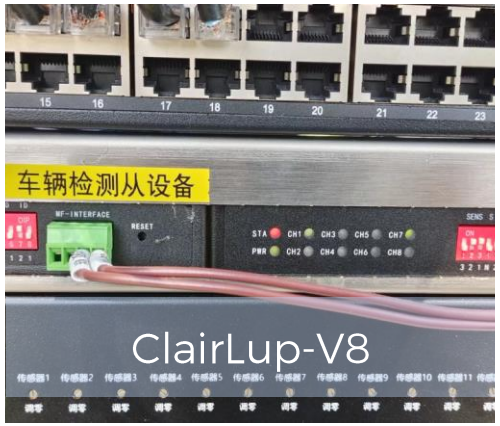
	Features	ClairLup-V4	FEIG VEK-M4	NORTECH TD664E	Note
6	Loop protection	Supports transformer isolation, gas discharge tube, TVS	Supports transformer isolation, gas discharge tube, TVS	Supports transformer isolation, gas discharge tube, TVS	
7	Power supply protection	Supports reverse polarity protection, supports clamp protection	Doesn't support reverse polarity protection, supports clamp protection	Supports reverse polarity protection, supports clamp protection	
8	Output inductance variation waveform	Supported	Not supported	Not supported	By observing the variation waveform of the inductance when vehicles pass through the loop, one can assess the construction quality on-site and visually analyze and locate any issues.
9	Loop status indication	Dual-color indicator light supports loop normal, open circuit, and short circuit indication.	Single-color indicator light, unable to differentiate between loop open circuit and short circuit during a fault.	Single-color indicator light, unable to differentiate between loop open circuit and short circuit during a fault.	
10	Strong electrical interference filtering	Supported	Supports partial noise filtering function	Not supported	The ClairLup vehicle detector has a built-in 40Hz~60Hz strong electrical interference signal filtering function.

Cases


ClairLup-V4


ClairLup-V2


ClairLup-V8F


车辆检测从设备
ClairLup-V8


ClairLup-V4F


ClairLup-V6


ClairLup-V4F


VDS501
ClairLup-V1

Cases



highway tolling systems



Traffic data collection

Weigh in motion projects all



highway tolling systems





Questions & Answers

TraffiClair

Thank You!!!

Sales@Trafficlair.com
Sales@DYMEC.com

DYMEC
AMERICAN INDUSTRIAL