

## Protocol HE

### HIGH EFFICIENCY

A proven supermarket refrigeration system for reducing refrigerant charge and installation, construction, and operating costs.



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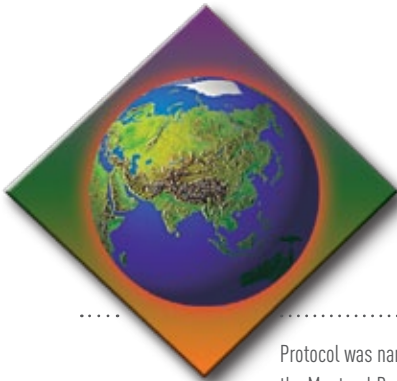
## PROTOCOL HE

# The Protocol Distributed System Concept.

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The Protocol concept utilizes compact multiple compressor refrigeration units enclosed in attractive housings. Unlike back room systems, individual Protocol units are “distributed” throughout the store, close to the display case loads being refrigerated.

The new Protocol High Efficiency series now incorporates vapor injected (ZFKV) scroll compressors for low temperature applications, and the ZBKC series of scroll compressors for medium temperature. This combination of scroll compressors results in the most efficient refrigeration system available in the industry today.



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Protocol was named after the Montreal Protocol where worldwide CFC phase-out schedules were first adopted.

### Protocol HE advantages.

- Reduces refrigerant charge, normally by 60-80%.
- Uses approximately 50-75% less refrigerant piping.
- Requires approximately 50-75% fewer braze joints.
- Lessens likelihood of refrigerant leaks.
- Uses HFC refrigerants. No CFC or HCFC refrigerants needed.
- Eliminates or decreases the need for EPRs.
- Eliminates the need for a machine room and associated costs.
- Lowers installation costs.
- Provides back-up protection and load matching with multiplexed compressors.
- Off-time, modular, electric or gas defrost.
- Air- or water-cooled.
- Energy cost savings over most traditional back room systems.

### HFC refrigerants.

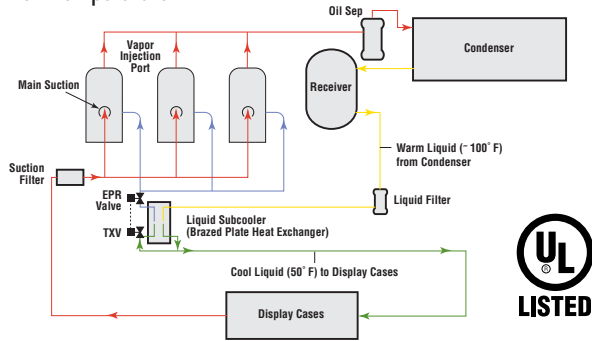
The Protocol High Efficiency series systems are designed specifically for R404a/R507 HFC refrigerants.



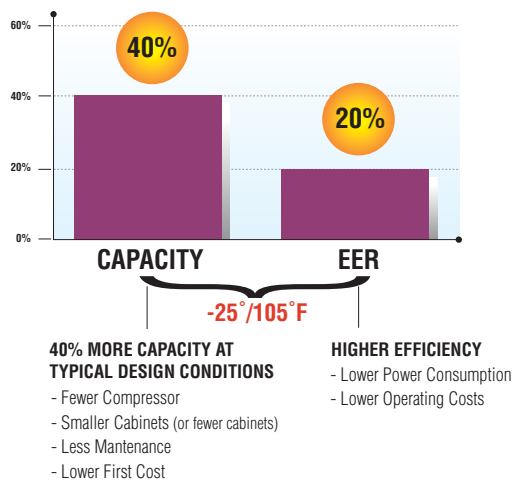
## Low temp Protocol HE.

The low temperature Protocol HE series includes vapor injected (ZFKV) scroll compressors in a parallel configuration. The economizer cycle enhances the system performance by sub-cooling the liquid refrigerant via “mid-pocket” interstage injection. Traditionally, this feature has only been available on large commercial screw compressors, but is now available with vapor injected scroll compressors.

Protocol HE with ZFKV Scroll Compressors Flow Diagram - Low Temperature



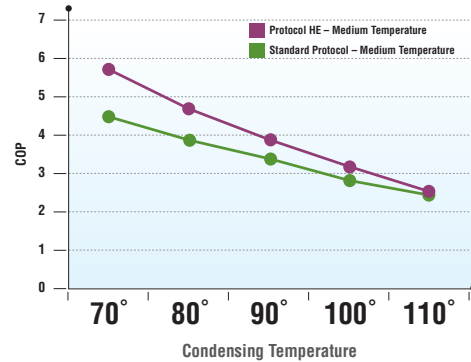
Protocol HE vs Standard Protocol - Low Temperature



## Medium temp Protocol HE with ZBKC Scroll compressors.

The ZBKC series of scroll compressors have been specifically designed for HFC medium temperature application. The design has been optimized to provide improved efficiency at lower condensing temperatures while maintaining efficiency and capacity at typical design conditions.

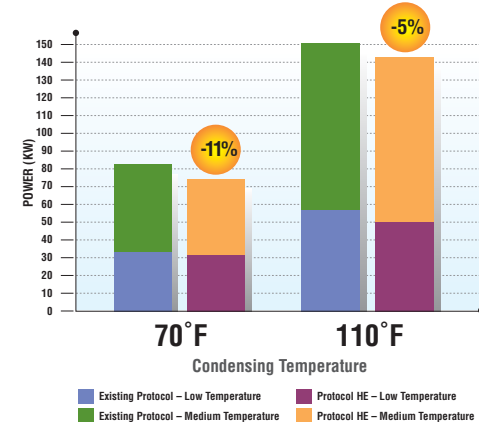
Protocol HE vs Standard Protocol - Medium Temperature



## Total store analysis.

The application of Protocol HE systems means total store energy savings, year round.

Power (Kw) for 60,000 Square Foot Store



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