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## PRODUCT OVERVIEW 2023



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**Maximum Working Pressure  
80 BAR**

# LINE COMPONENTS

**NEW PRODUCT**

## HIGH PRESSURE STAINLESS STEEL VALVES

For installations in seaside areas and outdoors applications where the air is highly humid and corrosive, Stainless Steel Valves are recommended which provide elevated surface protection against corrosion. These valves are also recommended in applications where regular surface treatment is carried out to prevent fungal and bacterial growth.

### STOP VALVES : MHPSV-SS



The Manik MHPSV-SS Valves have been specially designed for such applications. The MHPSV-SS Stop Valves are refrigerant shut-off valves designed to be socket-welded or butt-welded directly to steel piping, thereby eliminating potential leaky flanges or threaded joints and simplifying installation. These valves fit all requirements of the latest refrigeration technology and have desired flow characteristics with a low pressure drop design. The MHPSV-SS has specialised internal back-seating support which allows the shaft seal (packing gland) to be replaced while the valve is still under working condition. Interchangeable handwheel or seal cap available. These valves are available in angle and globe types. The Teflon seat lends durability to the seating surface.

#### FEATURES :

- **Maximum working pressure:** 80 Bar g (1160 psi g)
- **Fluid temperature range:** -60°C to + 150°C (-76°F to 302°F)
- **Application:** Ammonia, Fluorocarbons, Carbon Dioxide
- **Material: Body:** CF8 Cast Stainless Steel Body
- **Internals:** SS304      • **Seat:** PTFE
- **Connections:** DN-10-40 – Socket/Butt Weld
- DN 50-65 – Butt Weld.      • **Reliable Back Seating.**

### STOP CHECK VALVES AND CHECK VALVES : MHPCV-SS & MHPCV-SS



The Manik MHPCV-SS Valves have been specially designed for such applications. MHPCV-SS is a combination stop valve and normally-spring-closed check valve. Whereas MHPCV-SS is a simple angle-type check valve. Both of these are available in an angle way only. Valves open wide for full flow in the arrow's direction on the valve body and promptly reseal when reverse flow occurs. Optimum opening characteristics are attained due to Precisely Cut Ports (MHPCV-SS/MHPCV-SS 50-65). Primary characteristics of these valves include efficient functioning at low differential pressure, easy inspection and maintenance. These valves have stainless steel stems with back seating for seal replacement under working conditions. The internal design minimizes pulsations.

#### FEATURES :

- **Maximum working pressure:** 80 Bar g (1160 psi g)
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- **Material: Body:** CF8 Cast Stainless Steel Body
- **Internals:** SS304      • **Seat:** PTFE
- **Connections:** DN-15-40 – Socket/Butt Weld
- DN 50-65 – Butt Weld.      • **Reliable Back Seating.**

### REGULATING VALVES : MHPRG-SS A & B



The Manik MHPRG-SS Valves have been specially designed for such applications. There are two types of MHPRG hand regulating valve MHPRG-A-ss and MHPRG-B-SS are ideal for metering or flashing expansion of liquid refrigerants. These valves are available in angle and globe types. These valves have stainless steel stems with back seating for seal replacement under working conditions. MHPRG valve available in two variants- MHPRG-A-SS for liquid expansion lines and MHPRG-B-SS for liquid line flow regulation purpose. These valves are specifically designed as per international guidelines for refrigerating installations, specific flow conditions, and line characteristics. The MHPRG can also be used as a stop valve when the regulating function is not required. Interchangeable handwheel or seal cap available. Yellow seal caps or handwheels distinguish them from shut-off valves.

#### FEATURES :

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- **Connections:** DN-10-40 – Socket/Butt Weld
- DN 50-65 – Butt Weld.      • **Reliable Back Seating.**

### FILTER VALVE : MHPFV-SS



The Manik MHPFV-SS Valves have been specially designed for such applications. MHPFV-SS Filters are designed to facilitate the removal of foreign materials from refrigeration systems. They help to maintain and clean dirt and weld slag easily. These valves are available in angle and globe types. These filters are generally used to reduce downtime from the risk of unwanted breakdowns and are used ahead of key equipment such as Ammonia Pumps and Compressors etc. in the refrigeration plants during commissioning and where uninterrupted filtration of the refrigerant is required. Filter Mesh are available across the following mesh sizes 100µ (US150), 150µ (US100), 250µ (US60) and 500µ (US35).

For other sizes, please contact Manik Engineers.

#### FEATURES :

- **Maximum working pressure:** 80 Bar g (1160 psi g)
- **Fluid temperature range:** -60°C to + 150°C (-76°F to 302°F)
- **Application:** Ammonia, Fluorocarbons, Carbon Dioxide
- **Material: Body:** CF8 Cast Stainless Steel Body
- **Internals:** SS304      • **Seat:** PTFE
- **Connections:** DN-15-40 – Socket/Butt Weld
- DN 50-65 – Butt Weld.      • **Reliable Back Seating.**

All the MHP-SS series valves across sizes are registered as per the design registration numbers : 525661-011, 525662-001, 525654-001, 525657-001, 525656-001, 525655-001

**Maximum Working Pressure  
55 BAR**

## HIGH PRESSURE VALVES

### STOP VALVES : MHPSV



The MHPSV Stop Valves are refrigerant shut-off valves designed to be socket-welded or butt-welded directly to steel piping, thereby eliminating potential leaky flanges or threaded joints and simplifying installation. These valves fit all requirements of the latest refrigeration technology and have desired flow characteristics with a low pressure drop design. The MHPSV has specialised internal back-seating support which allows the shaft seal (packing gland) to be replaced while the valve is still under working condition. Interchangeable handwheel or seal cap available. These valves are available in angle and globe types. The Teflon seat lends durability to the seating surface.

#### FEATURES :

**Maximum working pressure:** 798 psi g (55 bar g).

**Fluid temperature range:** -60°C to + 150°C (-76°F to 302°F).

**Application:** Ammonia, Fluorocarbons, Carbon Dioxide.

**Material: Body:** LCC A352 Cast Steel Body

**Internals:** SS304 **Seat:** PTFE

**Connections:** DN10-40 – Socket/Butt Weld,  
DN50-300 – Butt Weld. Reliable Back Seating.

### STOP CHECK VALVES AND CHECK VALVES : MHPCV & MHPCV



MHPCV is a combination stop valve and normally-spring-closed check valve. Whereas MHPCV is a simple angle-type check valve. Both of these are available in an angle way only. Valves open wide for full flow in the arrow's direction on the valve body and promptly reset when reverse flow occurs. Optimum opening characteristics are attained due to Precisely Cut Ports (MHPCV/MHPCV 50-125). Primary characteristics of these valves include efficient functioning at low differential pressure, easy inspection and maintenance. These valves have stainless steel stems with back seating for seal replacement under working conditions. The internal design minimizes pulsations.

#### FEATURES :

**Maximum working pressure:** 798 psi g (55 bar g).

**Fluid temperature range:** -60°C to + 150°C (-76°F to 302°F).

**Application:** Ammonia, Fluorocarbons, Carbon Dioxide.

**Material: Body:** LCC A352 Cast Steel Body **Valve Cone:** SS304

**Valve Stem:** SS304 **Packing Gland:** SS304 **Seat:** PTFE

**Connections:** DN15-125 – Socket/Butt Weld  
Reliable Back Seating.

### REGULATING VALVES : MHPRG-A & B



There are two types of MHPRG hand regulating valve MHPRG-A and MHPRG-B are ideal for metering or flashing expansion of liquid refrigerants. These valves are available in angle and globe types. These valves have stainless steel stems with back seating for seal replacement under working conditions. MHPRG valve available in two variants- MHPRG-A for liquid expansion lines and MHPRG-B for liquid line flow regulation purpose. These valves are specifically designed as per international guidelines for refrigerating installations, specific flow conditions, and line characteristics. The MHPRG can also be used as a stop valve when the regulating function is not required. Interchangeable handwheel or seal cap available. Yellow seal caps or handwheels distinguish them from shut-off valves.

#### FEATURES :

**Maximum working pressure:** 798 psi g (55 bar g).

**Fluid temperature range:** -60°C to + 150°C (-76°F to 302°F).

**Application:** Ammonia, Fluorocarbons, Carbon Dioxide.

**Material: Body:** LCC A352 Cast Steel Body

**Valve Cone:** SS304 **Valve Stem:** SS304

**Packing Gland:** SS304 **Seat:** PTFE

**Connections:** DN10-65 – Socket/Butt Weld  
Reliable Back Seating.

### FILTER VALVE : MHPFV



MHPFV Filters are designed to facilitate the removal of foreign materials from refrigeration systems. They help to maintain and clean dirt and weld slag easily. These valves are available in angle and globe types.

These filters are generally used to reduce downtime from the risk of unwanted breakdowns and are used ahead of key equipment such as Ammonia Pumps and Compressors etc. in the refrigeration plants during commissioning and where uninterrupted filtration of the refrigerant is required.

Filter Mesh are available across the following mesh sizes 100μ (US150), 150μ (US100), 250μ (US60) and 500μ (US35).

For other sizes, please contact Manik Engineers.

#### FEATURES :

**Maximum working pressure:** 798 psi g (55 bar g).

**Fluid temperature range:** -60°C to + 150°C (-76°F to 302°F).

**Application:** Ammonia, Fluorocarbons, Carbon Dioxide.

**Material: Body:** LCC A352 Cast Steel Body

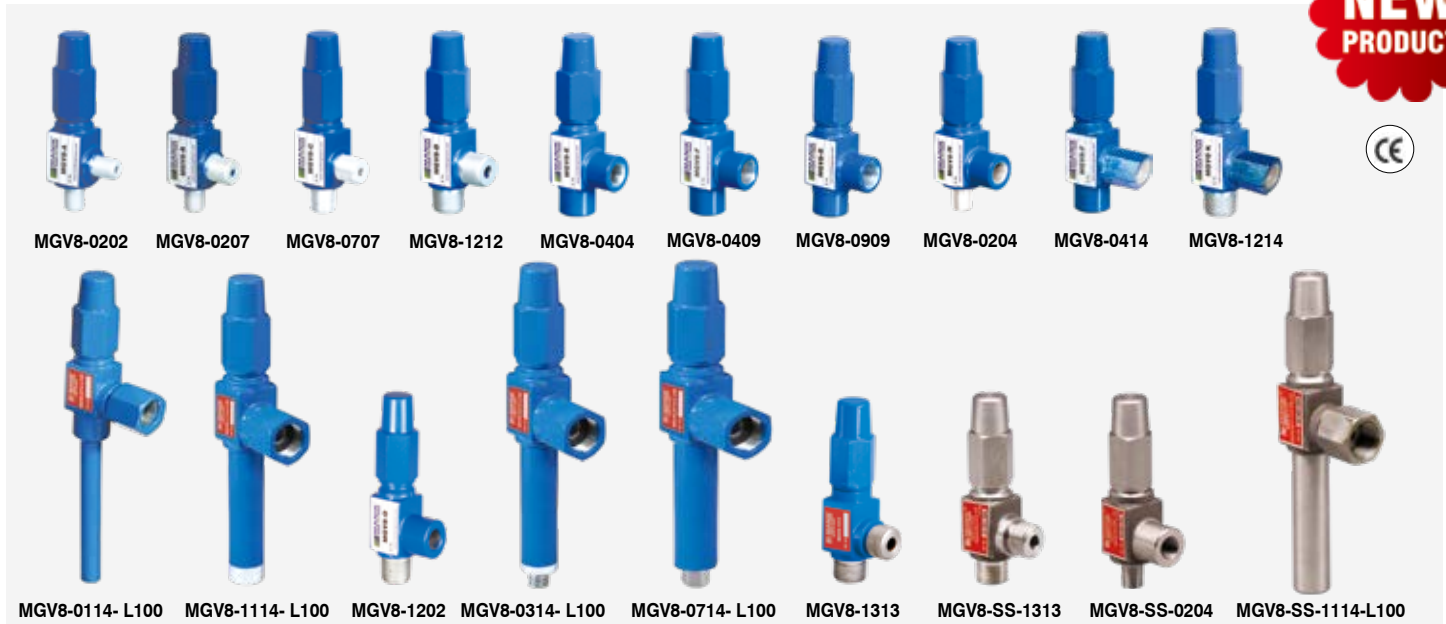
**Filter Mesh:** SS304

**Filter type:** Standard / Pleated

**Connections:** DN15-40– Socket/Butt Weld,  
DN50-200 - Butt Weld.

All the MHP series valves across sizes are registered as per the design registration numbers : 525661-011, 525662-001, 525654-001, 525657-001, 525656-001, 525655-001

## GAUGE VALVE : MGVS8



These specially designed refrigerant gauge, purge, and transducer valves feature tough, cast steel bodies, compact size, and polished stainless steel stems. Special gland Design prevents Leakage. Safety stems are designed to be non removable from the body to avoid dangerous stem "blow out".

MGVS8 is available in Cast Steel as well as Cast Stainless Steel.

- Inlet port options : 1/4", 3/8", 1/2 BSP/NPT Male Female as well as BW.
- Inlet Port length options : 50mm, 100mm, 150mm.
- Outlet port options : 1/4", 3/8", 1/2 BSP/NPT Male Female.
- Available accessories : Weld nipple, Blind Nut, Reducing Connector.

**Scan QR code for detailed catalog.**



## PISTON TYPE CHECK VALVES WITH MANUAL BYPASS : MCK-1



The MCK-1 are flanged, heavy-duty, piston-type check valves control the flow of refrigerant. Valves open wide for flow in the direction of the arrow on the valve body. Valves close tight when flow reversals occur. The piston design minimizes pulsations.

Valves open when inlet pressure exceeds outlet pressure (1 psid [.07 bar] minimum), thereby lifting the piston/seat assembly and allowing flow through the valve.

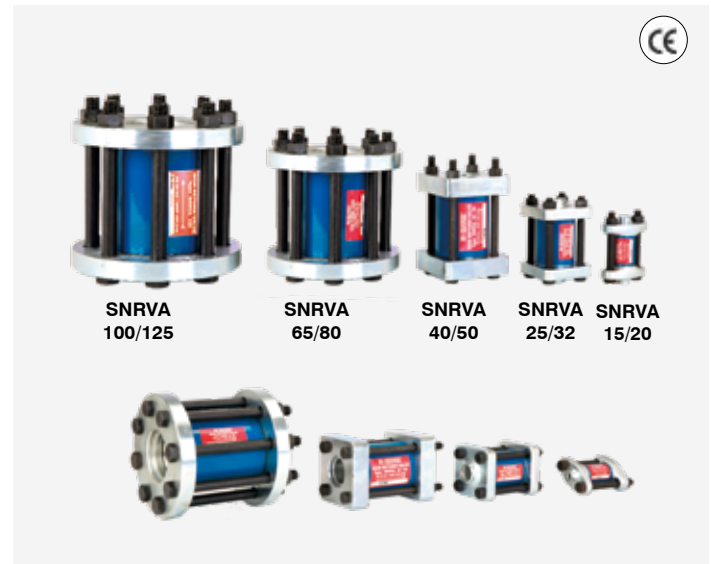
## LINE STRAINER : TA / FA



### STRAINERS TYPE TA / FA

Strainer type TA and FA with interchangeable filter insert is used in lines carrying fluorinated refrigerants, ammonia, water, brine, oil, and gas. Retains contaminants, e.g. slag, and weld beads and swarf. Strainers are available from 15NB to 125NB size with counter flanges.

## NON RETURN VALVES : SNRVA



### NON RETURN VALVES TYPE SNRVA

Check valve type SNRVA can be used in liquid, suction and hot gas lines in refrigeration and air conditioning plant with ammonia. SNRVA can also be used in refrigerating systems with fluorinated refrigerants. When the SNRVA is used in liquid lines where cold, thick oil or impurities may be present, it is recommended that the standard spring be replaced by a special spring. Available from 15NB to 125NB size.

### FEATURES :

- Ensures correct direction of flow ,
- Prevents back-condensation from warm evaporator to cold evaporator.
- Fitted with damping piston that makes the valves suitable for installation in lines where pulsation can occur, e.g. in the discharge line from the compressor. Designed to meet the strict quality demands and safety requirements for refrigeration installations, specified by the international classification societies.



# AMMONIA VALVES AND CONTROL VALVES

## SOLENOID VALVES FOR AMMONIA

### SA SERIES



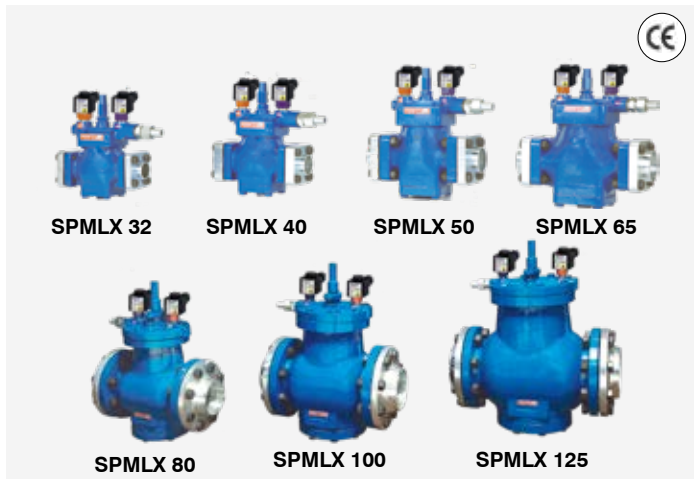
#### SA SERIES

Type SA5A3 solenoid valve is the direct acting type & type SA17A3, SA32P3, SA42P3, SA50P3 are higher capacity pilot operated solenoid valves for refrigeration & air conditioning applications.

#### FEATURES :

- Refrigerants : R717 (NH<sub>3</sub>), R22, R134A etc.
- Temperature of medium -40°C to + 80°C
- Single coil (type MKC-33) for all SA series valves.

### TWO-STEP SOLENOID VALVE : SPMLX



The Manik Two-Step Solenoid Valves type SPMLX are specially designed two-stage solenoid valves for refrigeration plants with Hot-gas defrosting systems to gradually introduce flow of refrigerant. They are mounted with 2 pilot solenoid valves and operate with external pressure. These valves are suited where high opening differential is required. These valves can be used in any type of refrigeration plants such as Direct Expansion, Overfeed, Gravity.

The SPMLX has 2 opening ports (Peripheral and Main).

The SPMLX operates in 2 stages:

- In the 1st stage, the valve's peripheral port opens to about 10% of the capacity of the valve after electrical supply is applied to pilot solenoid valves.
- The 2nd stage where the main opens automatically when the differential pressure across the valve reaches 1.5 Bar.

This type of opening ensures moderated introduction of the flow into the line and helps avoid liquid hammers in the system.

#### FEATURES :

- Available in sizes from 32NB to 125NB.
- High opening differential.
- High-capacity solenoid valves.
- Direct screwed in pilot valves.
- Connection for pressure/temperature gauge.
- Durable Teflon seating.
- Minimum maintenance required.
- Manual bypass operation available for maintenance and servicing.

### MS SERIES



These high quality valves are compact, strong and reliable. Stainless steel pistons with Teflon seals are used to overcome the problem of valve sticking due to dirt or lack of oil. Pilot seats are polished stainless steel on Teflon discs and main valve seats align for tight closing. These valves can be used in liquid, suction, hot gas, discharge, pump lines etc., where a strong opening, tight closing valve is required.

#### FEATURES :

- All Valves are spring closing.
- All Valves have Teflon seat. One Solenoid Coil fits all Valves.
- Close-coupled strainers are available.
- Non Asbestos gasket, 300 PSI (21 bar) MOPD.
- MS2A (4 mm Port).
- MS6A (4 mm Port) with Manual Bypass.
- MS8A½" (15 mm Connection) in Ductile Iron Body.
- MS7A¾" - 1¼" (20 - 32 mm Connection) in Ductile Iron Body.
- Suitable for Ammonia, CO<sub>2</sub>, R-22, R134a, R404a and other refrigerants.

### MS4A SERIES



The Manik MS4A Series Valves are robust and reliable series of solenoid valves with superior design to overcome dirt and sticky oil during operation.

#### FEATURES:

- For Ammonia, R22, R134a and other refrigerants.
- Electric Shut-Off / Back Pressure regulation.
- Safe Working Pressure: 400 psig (28 bar g)
- Flanges provided for easy installation.

### MRASV 3 TO 40 AND DMRASV 10 TO 20



MRASV solenoid valve is of two types: 1. Direct operated 2. Pilot operated. It can be used for ammonia as well as other fluorinated refrigerants in suction, liquid and hot gas lines.

There is another variant which is DMRASV. It has an assisted lift mechanism which is specifically designed to open and keep the valve open even when the differential pressure across the valve is "ZERO" bar. The DMRASV can be used for similar refrigerants as MRASV.

Both the MRASV and DMRASV can be ordered as a complete valve assembly or as different components viz. valve body, coil and flanges can be ordered separately. DMRASV is available in sizes 10, 15 & 20mm port sizes.

# PRESSURE AND TEMPERATURE REGULATORS

## MULTI-FUNCTION REGULATOR VALVE : SPM



The Manik SPM is a specially designed Multifunction temperature/pressure regulator for various refrigeration applications. These valves have V-cut cones for precise regulation. They can be used in any type of refrigeration plants such as Direct Expansion, Overfeed, Gravity.

These valves are used with pilot valves and the function/operation is decided based on the type of pilot valves selected.

The SPM valves are of 2 types – Single Function valves and Three Function valves.

The single function valve can have single pilot valve fitted to the main valves whereas, the three function valves can have up to 3 pilot valves fitted to them for multi-functioning. The SPM can be used as Back-Pressure regulator, Differential pressure regulator, Outlet Pressure regulator or as Direct solenoid Valves.

### FEATURES :

- Available from 15NB to 125NB.
- Multifunction Valve. i.e Multiple applications are possible with different pilot valves.
- Very low opening differential of 0.2 Bar (3 psi) across all sizes.
- Precise Control and operation.
- Variable capacity options available for the same main valve.
- Direct screwed in pilot valves.
- Connection for pressure/temperature gauge.
- Inbuilt Strainer to prevent failure due to dirt/debris.
- Strainer can be cleaned without opening complete valve.
- Top cover can be mounted in any position.
- Durable Teflon seating.
- Minimum maintenance required.
- Single function valves can be upgraded to three function valves.
- Manual bypass operation available for maintenance and servicing.

## MA4A SERIES



The Manik 4A Series Valves are robust and reliable series of regulating modular valves with superior design to overcome dirt and sticky oil during operation. Multiple models are available for various control applications in ammonia refrigeration plants. The Valves are mainly used for Pressure regulation (MA4A). For Ammonia, R22, R134a and other refrigerants.

### FEATURES :

- Electric Shut-Off / Back Pressure regulation.
- Flanges provided for easy installation.

### SPECIFICATIONS

- **Safe Working Pressure:** 400 psig (28 bar g)
- **Available Sizes:** 3/4" to 2"
- **Body:** EN GJS 400/18 LT
- **Piston:** Stainless Steel with Teflon Seating
- **Main Seat:** Integral for 3/4" through 1 1/4"; Stainless Steel for 1 1/2" and 2"
- **Gaskets:** Non-asbestos.
- **Manual Spindle:** Steel, plated.
- **Pilots:** Stainless steel
- **Pilot Orifice:** Stainless steel
- **Flanges:** Forged steel, IS2062
- **Safe Working Pressure:** 465 psig (32 bar g).
- **Operating Temperature:** -60/+120°C

## OIL SEPARATOR CONTROL VALVE :MOSCV



The Manik Oil Separator Pressure Control Valve is used for the control of discharge pressure of the compressor. The valve aims to provide quick pressure build-up of oil pressure. Additionally, the MOSCV acts as a non-return valve in the discharge line.

The MOSCV operates on differential pressure. When the differential pressure across the oil separator and the suction side goes above 2 Bar (28 psi), the valve is fully opened. A differential pressure of 0.6 bar (8psi) is required for Low-pressure applications. These valves are available from 65 NB to 200 NB in butt weld angle type only.



# PILOT VALVES FOR SPM / MA4A

The pilot valves when used in conjunction with SPM valves can act as constant pressure regulators, Capacity regulators, Crank case pressure regulators, refrigerant pressure regulator and many more. They are suitable for all sizes of SPM valves. More than one pilot valves can be connected in series or parallel depending upon the type of SPM valve selected to cater to multiple applications.

Use of pilot valves for multifunction

- Constant Pressure controlled - MPR-LP / MPR-HP
- Differential Pressure controlled - MPR-DPL / MPR-DPH
- Solenoid operated pilot valve - Normally Closed/Open - MPSV-NC / MPSV-NO
- Control on pressure with relation to a reference pressure: - MPR-OL / MPR-OH

## SPM3 - 3 PILOT PORT VALVES WITH COMBINED PILOT VALVES:

The SPM3 series main valves can be configured with up to 3 pilot valves (2 in series and 1 in parallel). Common applications for these valves are Electric shut off (MPSV NO/NC) with pressure regulation (MPR LP/HP), Electrical over ride for pressure regulation (MPSV NO/NC in parallel with MPR LP/HP), Electrical operation for 2 different pressure regulation (MPSV NO/NC + MPR LP in parallel with MPR LP), Differential pressure regulation combined with electrical shut off (MPSV NO/NC + MPR DPL/DPH) and many others.

## 1. BACK PRESSURE REGULATOR : MPR LP/HP



### FOR BACK-PRESSURE REGULATION (MPR LP/HP):

The Pilot valves MPR LP/HP are used with SPM/MA4A Valves for back pressure regulation in refrigeration system to control evaporator/accumulator pressure, ammonia pump pressure, condenser pressure.

**MPR LP** available in following ranges  
-0.66 to 10 Bar & -0.66 to 2 Bar,  
-0.66 to 7 Bar

**MPR HP** available in following ranges  
4-22 Bar & 4-28 Bar.

## 2. PILOT SOLENOID VALVE : MPSV NO/NC



### AS SOLENOID VALVE NORMALLY OPEN/CLOSE (MPSV NO/NC):

The Pilot Valves MPSV NO/NC are used with SPM/MA4A Valves when the Main valve is required to be operated as Normally Open or Normally Closed Solenoid Valves for ON/OFF regulation. These pilots are also used in conjunction with other Pilot valve so toggle their regulating function electrically.

## 3. DIFFERENTIAL PRESSURE REGULATOR : MPR DPL/DPH



### DIFFERENTIAL PRESSURE REGULATION (MPR DPL/DPH):

The Pilot Valves MPR DPL/DPH are used with SPM valves for Condenser liquid control during defrosting by maintaining a differential pressure between receiver and hot gas pressure. It is also used for oil pressure control during start-ups. These valves are also used for liquid pump differential pressure regulation, which is very important in some types of pump circulation systems.

**MPR DPL** available in following ranges -  
-0.66 to 10 Bar & -0.66 to 2 Bar, -0.66 to 7 Bar

**MPR DPH** available in following ranges -  
4-22 Bar & 4-28 Bar,

## 4. OUTLET PRESSURE REGULATOR : MPR OL/OH



### FOR OUTLET PRESSURE REGULATION (MPR OL/OH):

The Pilot Valves MPR OL/OH are used with SPM valves for outlet pressure regulation for compressor crankcase pressure regulation during start-ups or after defrosts. It is also used for Hot-gas bypass applications to regulate suction pressure or intermediate pressure when it drops below the set value.

**MPR OL** available in following ranges -  
-0.66 to 10 Bar & -0.66 to 2 Bar, -0.66 to 7 Bar

**MPR OH** available in following ranges -  
4-22 Bar & 4-28 Bar,

## MANIK PRESSURE REGULATING VALVE : MPRV



Manik Pressure Regulating Valve can be used for hot gas defrosting (drain lines), refrigerant pump bypass (to ensure min. flow in refrigerant pumps) and for several other functions in refrigeration and freezing plants for pressure regulation.

MPRV is installed on the Evaporator side of Overfeed Ammonia refrigeration plant with Hot-Gas Defrosting Systems. It is used to regulate pressure in the evaporator during defrosting. The outlet of the MPRV is connected after the SPMLX (Wet-return suction valve).

Range : 0 – 7 bar

Working Pressure : Max. work pressure: 32 bar, Test pressure 42 bar

Connection : ½ inch Butt weld Flange

# LEVEL CONTROLS

## LIQUID LEVEL CONTROLLER : 39FI



39 FI      LC 101A      Stand Alone Amplifier      Amplifier with Stainless steel enclosure      Panel Mounting Amplifier

The Liquid Level Controllers are available in 2 models.

TYPE LC 101 AI & 39FI

The Liquid Controller consists of a float chamber and an electronic controller. It can be used on all non corrosive liquids such as Ammonia, Toluene, Freon etc. The electronic controller has a bar graph display module installed to continuously display the rising & falling of liquid level inside the float chamber. The level controller is used to control the liquid level in various refrigeration applications. These level controllers can also be used as a protection against too high & too low liquid levels.

### FEATURES :

- Refrigerant R717 (NH<sub>3</sub>), HFC, HCFC.
- Differential Adjustable between 10 to 40 mm.
- Max operating pressure for float housing 19 bar.
- Enclosure for float housing IP 65
- Amplifier / controller is available in IP 65 wall mounting enclosure or DIN 1/4 for panel mounting enclosure.
- Float Chamber and Amplifier are also available in flame proof enclosure.

## MODULATING LIQUID LEVEL REGULATORS : ALMV-L



ALMV-L-80      ALMV-L-125

For modulating liquid level control in refrigeration, freezing and air conditioning plant, a system comprising a modulating servo-controlled main expansion valve type ALMV-L, controlled by a pilot float valve type SV, is used. ALMV-L and SV systems are used on the evaporator side. ALMV-L and SV systems are used on the condenser side.

The system is suitable for use with ammonia or fluorinated refrigerants. The ALMV-L can be used in liquid lines to or from

- evaporators
- separators
- intermediate coolers
- condensers
- receivers

Modulating liquid level regulation provides liquid injection that is proportional to the actual capacity. This gives a constant amount of flashgas, thus ensuring stable regulation and economic operation because variations in pressure and temperature are held to a minimum.

### FEATURES

- Applicable to all common, non-flammable refrigerants, including R 717, and non-corrosive gases/liquids - dependent on sealing material compatibility
- ALMV-L are based on SPM valve family housings
- Manual operation possible
- Position indicator available
- Simple installation

## LIQUID EYE : MLE



MLE-25, MLE-32, MLE-40, MLE-50, MLE-65

Manik Engineers LIQUID EYE gives simple indication of actual liquid levels in industrial and commercial refrigeration systems. When liquid refrigerant is present the distinctive reflex glass appears dark; when vapor refrigerant is present, the glass is light. The long neck housing provides enough length for ease of welding and insulation clearance for low temperature applications. The optional frost-free shield facilitates clear viewing of refrigerant level under frosting conditions. LIQUID Eye is suitable for ammonia, R22, R134a, CO<sub>2</sub> and

other approved refrigerants. Typical uses include: refrigerant receivers, level columns, accumulators, inter coolers, suction lines, oil lines, and liquid lines.

## MANIK LEVEL SWITCH : MLS39



MLS-39-SS      MLS-39-SS-HLI      MLS-39      MLS-39-HLI

STAINLESS STEEL VERSION      MS VERSION

The Manik MLS39 is a refrigerant liquid level switch used to electrically indicate or control a liquid level by opening or closing a SPDT/DPDT switch. The Float Chamber is made of Cast Steel which can sustain high pressures upto 50Bars. The float chamber is also available in Cast Stainless Steel (CF8) which provides robust corrosion-free design. Long lasting independent LED Lamps provide quick indication of High and Low level even from a distance. The precise and reliable electromechanical design provides long life performance for almost any application. For ease of installation, switch assembly position rotates 360°.

MLS 39 is used for various applications such as liquid level control in evaporators, protection switch for high and low level in pump re-circulatory vessels.

Liquid operating point can be easily adjusted. MSL39 is supplied with weldable flanges which is very easy to install, service and repair.

### FEATURES :

- Safe Working Pressure → 32 bar
- Operating Temperature → -60°C to 150°C
- Suitable for NH<sub>3</sub>, R-22, R404a etc
- Flange connection → ¾" or 1" BW/SW.
- Mechanically adjustable operating points.
- Electromagnetic Heavy Duty Snap Acting
- 10A switch.
- Easily replaceable switch box unit.
- DIN connector for Electrical connection.
- Flame proof version available on request.

## REFLEX / FROST FREE LIQUID LEVEL GLASSES : MGLG 150 - 2000



MGLG-300-R      MGLG-1100-NF      MGLG-1600-NF

MGLG are Manik Glass level gauges made from special low temperature steel plates that are designed to meet the requirements of modern industrial refrigeration. They are supplied with stop valves (MGLG-SV) for connection and isolation to the refrigeration system. The MGLG provides an accurate easy reading of the refrigerant level inside the pressure vessel over which they are mounted. The top and the base frame are mounted together with the help of SS Allen bolts. This makes it easy for insulation, inspection and service onsite, if required.

All gauges are supplied with a built-in safety system (non-return device) and in case a glass gets damaged, the safety system due to the pressure of the refrigerant, shall prevent refrigerant loss to an absolute minimum.

### FEATURES

- **Refrigerants:** Applicable to HCFC, HFC and R717 (Ammonia).
- **Temperature range:** -10/+100°C (-14/+212°F) or -50/+30°C (-58/+86°F)
- Maximum operating pressure: 25 bar g (363 psi g)
- Equipped with boron silicate glass, hardened by an accurately controlled heat treatment process



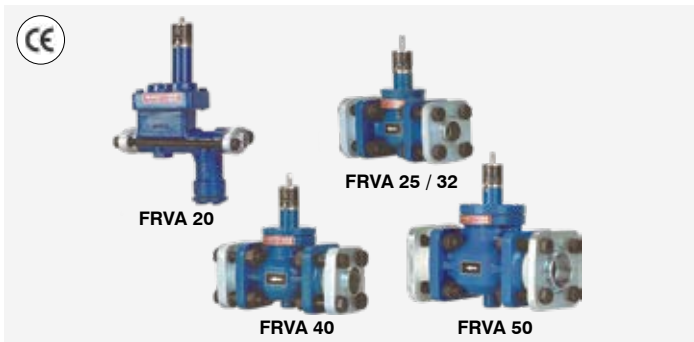
# DEFROST CONTROLS

## HOT GAS DEFROSTING SYSTEM



The Manik Hot-gas Defrost Station is an efficient way to defrost your coils and save on your time as well as electricity bills. Frosting on your coils can be melted by introducing Hot discharge gas from the compressor. This can be achieved by the Manik Hot-gas Defrost station with includes valve station and the intelligent electronic defrost control panel. With an automated Panel, no external electric heaters or water spray systems with drains are required which make the coil defrosting process easy and trouble-free. The Manik Defrost controller can be set to run at periodic intervals throughout the day. Hence after initial set-up the complete system runs without any human interference. These are available for both Gravity and Overfeed Systems.

## CONSTANT FLOW VALVE : FRVA



Automatic Liquid Flow regulator Type FRVA  
For Mechanical Pumped (Ammonia) Liquid Overfeed Systems

### FEATURES :

- External Adjustment
- Easy Setting Scale
- Eliminates System Balancing
- Integral Check Valve
- "Frost Free" Neck
- Design Pressure (MWP): 27.6 bar (400 psig)
- Available up to 400 TR systems.
- Automatic Flow Regulator, is used as a liquid control device for Ammonia Overfeed Systems.

This Automatic Flow Regulator, once set, maintains a constant flow rate of liquid to the evaporator. It also serves as a check valve to prevent back flow into the liquid line from the evaporator during pressure reversals which occur during hot gas defrost.

## AUTOMATIC LIQUID DRAINER / FLOAT DRAINER : ALD



The Type ALD Automatic Liquid Drainer is a combination of a Type MLS39, a 13mm (1/2") Port Size Type SA17A3 Solenoid Valve Assembly, a 3/4" and a 1/4" Hand Expansion Valve, as well as necessary pipe and fittings, complete for field assembly as shown on

Figure 1. All are heavy duty devices intended for use with Ammonia, R-22, R-502 and other common refrigerants.

**PURPOSE :** It is the purpose of the Type ALD Automatic Liquid Drainer to permit flow of liquid refrigerant only and to prevent the flow of vapor refrigerant. It is intended for use in draining liquid from defrosting evaporators, or heat recovery condensers, into a lower pressure portion of the system.



Design Reg.  
No. 325660-001



MDRV 20



MDRV 25

## DEFROST RELIEF REGULATOR : MDRV

MDRV is angle-way construction defrost relief valve, with variable opening pressure between ( $\Delta P$ ): 29 - 116 psi (2 - 8 bar). The valve is also designed to work as stop valve with metal to metal back seating facility which allows to replace spindle seal even when valves are under pressure. While designing the valve fluttering due to low velocity and low density are also considered. It is possible to use the valves with wide variation in capacity demands, i.e. from maximum efficiency to part load. A special material O-ring gives excellent sealing over the seat area. Available in 3/4" and 1" SW connections.

## TWO-STEP HOT-GAS SOLENOID VALVE : MS4D



The MS4D is a Two Step Solenoid Valve which opens to 10% of the rated flow in the 1st step (soft open) and opens completely in the 2nd step. The type of operation, helps prevent probable liquid hammers in the system. The valve is direct replacement for MS4A valves with better versatility. Due to its special design, this valve can be used to replace dual solenoid systems of Soft-gas and Hot-gas in Hot-Gas defrosting systems with a single valve. **It is available in 20-50NB sizes.**

## DEFROST CONTROLLER : FROST MASTER



Frost Control is a complete electronic controller with real time for hot gas / electrical / water defrost system from MANIK Engineers.

### FEATURES :

The MANIK Frost Master is designed to control the evaporator operations for large ammonia and halocarbon refrigeration systems. The MANIK Frost Master performs the functions of following independent control systems:

- Evaporator valve group status monitor
- Multi-Function defrost clock
- Remote communication
- Automatic defrost cycle with real time clock

# SAFETY EQUIPMENTS

## SAFETY VALVES : MSRV SERIES



Safety Valves are most important safety devices in any refrigeration plant. MSRV are designed to provide emergency relief from excessive pressure in refrigerant-containing vessels. They are built in strict conformance with AAR standard 1 requirements for safety relief devices. This code requires pressure vessels of all refrigeration systems to be protected by a pressure relief device or other approved means to safely relieve pressure in the event of fire or other abnormal conditions.

### FEATURES :

- **Body** : EN-GJS-400/18-LT
- **Internals** : SS304
- **Operating Range** : -50°C to +55°C
- **Set Pressure Range** : 5 MPa (75 PSI/5bar) to 25 MPa (360 PSI/25 bar)
- **Operation Range** : 5% of set value
- **Connections** : Threaded/Flanged/Connector
- \* **Calibration certificate provided with each valve.**
- \* **Accessories:** Manik Make Safety Relief Valve indicator can be directly mounted on safety valve outlet.

### MODELS

Model No.	Threaded Connection	Welded Connection
MSRV15	3/4" X 1"	1/2" X 3/4"
MSRV20	1" X 1 1/4"	3/4" X 1"
MSRV25	1 1/4" X 1 1/2"	1" X 1 1/4"

## REFRIGERANT PRESSURE RELIEF VALVES FOR AMMONIA : SH SERIES



Designed to provide emergency relief from excessive pressure in refrigerant-containing vessels, they are built in strict conformance with ASME Boiler and Pressure Vessel Code requirements for safety relief devices. Their capacities are rated by the National Board of Boiler and Pressure Vessel Inspectors. These tamper-resistant valves are accurately set and sealed by qualified technicians at the factory. These Manik Engineers pressure-relief valves help meet the requirements of ANSI/ASHRAE 15-2014 Safety Code for Mechanical Refrigeration as well as other worldwide codes. Where dual pressure-relief valves are required, Manik Engineers can provide the three-way valves and other components necessary for assembly.

### MODELS

Model No.	Threaded Connection
SH5600A	1/2" X 3/4"
SH5601	1/2" X 1"
SH5602/SH5632R	3/4" X 1"
SH5613/SH5633R	1" X 1 1/4"
SH5604/SH5634R	1 1/4" X 1 1/2"

## DUAL MANIFOLDS : DSV2, DSV3 AND DSV 4



Dual Manifolds are used where dual pressure-relief valves are required. Manik Engineers can provide the three-way valves and other components necessary for assembly. With this type of arrangement, safety valves can be serviced without compromising the safety of the plant/vessel by keeping either of the safety valve always under operation. It is a standard practice to have Dual manifolds on pressure vessels in modern refrigeration.

### FEATURES:

- Body:** EN-GJS-400/18 LT
- Internals:** SS304
- Dual Manifold connections:** DSV2/DSV4: Threaded/Flanged SW  
DSV3: Threaded/Connector

### MODELS

Model No.	Inlet/Outlet	Suitable Safety Valve
DSV2	1/2" X 1/2"	MSRV15
	1/2" X 1/2"	SH5600A
DSV3	1/2" X 1/2"	SH5601
	3/4" X 3/4"	SH5602
DSV4	1" X 1"	MSRV20
	1 1/4" X 1 1/4"	MSRV25
DSV-SH	1" X 1"	SH5613
	1 1/4" X 1 1/4"	SH5604



## SAFETY VALVE INDICATOR / RELIEF VENT INDICATOR : MT 100



The Manik Engineers MT-100 pressure relief event indicator offers a simple yet innovative solution to quickly identify when a pressurized system has been compromised. A Manik Engineers MT-100 installed on the outlet of a pressure relief valve (PRV) can be the first line of defense against the costly and potentially hazardous release of refrigerants such as ammonia or Freon, or steam and other compressed gases. By providing a visual indication of what can be an intermittent event, the Manik Engineers MT-100 provides the system operator with a quick, reliable, and cost effective solution to a problem that could go undetected for a significant amount of time.

## DEAD MAN'S VALVE : MDMV



MDMV means Dead Man's Valve. It is used for very fast oil or water drain. MDMV is specially designed to drain oil and water from closed loop refrigerant systems under pressure. The valve is self-closing on release of the handle, which provides protection to operator against refrigerant leaks which can release gas inadvertently into the atmosphere. To avoid hydraulic pressure build-up between the stop valve and the MDMV an essential relief component is included as part of the cone assembly, which will open at 25 bar (363 psi). MDMV is designed to conform to all the safety rules and regulations specified by national and international standards for industrial refrigeration. Available in 1/2" and 3/4" SW connections.

MODEL NO.	CONNECTION
MDMV-15-BW	1/2" X 1/2" Butt Weld
MDMV-15-SW	1/2" X 1/2" Socket Weld
MDMV-15-BSP	1/2" X 1/2" BSP threading
MDMV-20-BW	3/4" X 3/4" Butt Weld
MDMV-20-SW	3/4" X 3/4" Socket Weld
MDMV-20-BSP	3/4" X 3/4" BSP threading

## AMMONIA LEAK DETECTION SYSTEM



The Manik Ammonia Leak Detector provides precise, stable readings and even in demanding environments are simple to operate, fast, reliable and built to last.

### FEATURES:

- Three Level Alarm for each channel
    1. First - Contamination
    2. Second - Early Warning
    3. Final - Alarm
- These alarms have been designed as per international guidelines. The alarm levels are site adjustable from 0-1000ppm.
- Multi-point Alarm Units.
  - Operates on 230VAC, 50Hz, with inbuilt power supply for Ammonia Transmitters
  - Alarm Hooter(90dB) for quick detection in noisy environments.
  - Robust case for long life in harsh environments
  - Continuous monitoring
  - Low zero point drift
  - Stable Positioning
  - Easy maintenance / calibration
  - Reverse polarity protected
  - Overload protected
  - Long life sensor
  - 4-20 mA analog signal output from Transmitter
  - IP 44 protected enclosure, for panel and wall mounting application
  - LAN / RS485 modbus protocol for PLC / SCADA interface.

### Additional features for PLC Based Version:

- 7" TFT Colour touch screen graphic display.
- Set point and relay output for individual channel.
- SMS alert on 5 phones

### Ammonia Sensor (AST) :

The Manik GP-SA stand-alone detector represents one of the lines in a new generation of gas detectors featuring an integrated microprocessor. The detector continuously monitors the ammonia concentration for 0-1000 ppm range. In the Manik GP-SA detector the sensor signal is converted to a linear output signal of 4-20 mA.

Available in Electrochemical and Semiconductor type.

Ammonia Sensors for Vent Line (AST-SV) are also available for installation on vent lines of safety valves to detect safety valve operation.

Suitable for Refrigerants : RA04A, R134A.

## HANDHELD AMMONIA GAS LEAK DETECTOR : HLD



### FEATURES :

- Microprocessor controlled device
- Customized calibration optional possible
- Display of the calibrated gas concentration
- Values from 1 ppm up to 2000 ppm (Optional 1 up to 1000 ppm Automatic measuring range change over )
- Various optional Accessories, variable acoustic signal depending on concentration (can be switched OFF), automatic zero setting on air after switch ON.

## EMERGENCY PRESSURE CONTROL SYSTEM: MEPCS-01



The Manik "Emergency Pressure Control System", MEPCS-01 is designed to maintain strict safety in refrigeration plants. The controller provides a 2 level system to alert the plant operators/personnel and also operate safety systems in case, the system pressure goes beyond the set critical pressure. This controller is designed as per AAR Standard 1.

## SAFETY VALVES FOR COMPRESSOR : VCSV



The VCSV is a threaded type safety valve which is directly mounted inside the Vilter compressor such as Vilter compressor for inter stage pressure relief. The valve comes in standard set pressure of 275PSI. The threading is 1 1/4" BSP. The body is blackodised to prevent corrosion. The valve offers reliable performance with SS seat and Teflon sealing. 300PSI set pressure available on request.

## MAN TRAP ALARM : MTA



### MAN TRAP ALARM kit:

Consisting of control unit with acoustic-visual warning. It comes complete with buffer battery and luminous emergency in-room pushbutton.

### APPLICATIONS:

"Man in room" safety system for Low Temperature Rooms/Chambers.

### SYSTEM DESCRIPTION:

The MAN TRAP ALARM kit allows a person trapped inside the cold room to activate an acoustic-luminous alarm installed outside the room and call for help. The system will work even in the event of a temporary power cut thanks to the buffer battery on the external unit. Special SS Switches with Heater are available are Very Low Temperature Rooms.

The Cold Room Alarm Unit is available in 3 different models 4, 8 or 16 Input. The 4 input unit can be used for 4 cold rooms, 8 input unit for 8 rooms and 16 input unit for 16 rooms. Thus giving the flexibility and low cost.

### COMPONENT PARTS:

- Emergency pushbutton to be fitted inside cold room. This is a luminous pushbutton with a N.C. contact. The pushbutton is illuminated by LEDs, thus making it easy to find even in the dark.
- Acoustic-visual alarm control unit to be fitted outside the room. Features a siren and a flashing light and a buffer battery to provide power in the event of a black-out. Also has a clean contact (closed when alarm is active) that can be used to inhibit refrigeration, switch on the interior room light or activate other devices such as a dialer for remote alarm activation.

## REFRIGERANT SENSOR TRANSMITTER : RST



The Manik RST stand-alone detector represents one of the lines in a new generation of gas detectors featuring an integrated microprocessor. The detector continuously monitors the gas concentration, whether it is in the 0-100% LEL range (lower explosion level) or the 0-1000 ppm range, in connection with e.g. refrigerants.

### FEATURES:

In the Manik RST detector the sensor signal is converted to a linear output signal of 4-20 mA.

Suitable for Gases : R404A, R134A.



# ENERGY SAVING EQUIPMENTS

## AUTOMATIC AIR PURGER FOR REFRIGERATION PLANTS : MSGP-2E

Removes Non condensable gases / Air from refrigeration plants. Fully factory assembled unit. Can be used as multi point purger with MANIK make "AIR PURGER CONTROLLER"  
No need to install above condenser / receiver.  
Can be installed in plant room / ground level.  
All standard MANIK controls are externally installed, can be serviced / replaced externally.

### ADVANTAGES OF AIR PURGER

- Fully automatic gas purger for refrigeration plants
- Automatic purger continually functions to scavenge and remove air from System
- Maintains condensing temperature at nearly optimum operating conditions
- Reduces the concentration of non-condensable gases to a negligible Percentage
- No need of separate refrigeration system
- Eliminates the labour associated with personnel regularly removing air by manual operation
- \* **Water bubbler and water SV available separately.**
- \* **PLC Based Purger Controller available separately.**



## AMMONIA DEHYDRATOR : WDO



System Cleaner removes the Water, Dirt and Oil from Ammonia System that air purger leaves behind

The MANIK WDO is the only system cleaner that boosts

- Lower Installation Cost
- Self Regulating Operating
- Shortest Payback Time
- Energy-Neutral Operation
- Very Low Maintenance

How you can tell if there's water in your system ?

Air-purger only removes non-condensable like air. If your air-purger has been venting air, it's been leaving behind the water vapour that's always in the air. If your recirculating evaporator is operating a few degrees warmer than the pressure indicates, this could be due

to water in Ammonia. If water comes out of your oil pot before the oil, there is water in your system.

You can easily measure the concentration of Water in your system with the graduated Ammonia Sampling Container.

### COMPRESSOR EXIT TEMPERATURE INCREASE

Water Present	0%	10%	20%
Comp Exit Temp	0°C	5.5°C	12°C

## MOISTURE MEASURING INSTRUMENT : AMMONIA SAMPLER



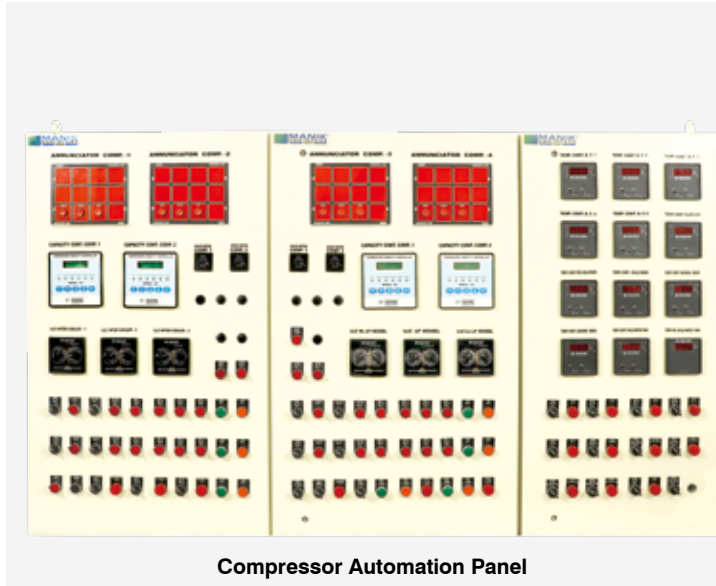
This specially designed glass measurement beaker is used for measuring the amount of water in an ammonia refrigeration system. Its unique design NH<sub>3</sub>-SAP-01 allows for fine measurement of the amount of water left over after a 100ml sample is taken from your system.

## CHILLER PERFORMANCE METER



The Manik Chiller Performance Meter provides highly accurate thermal energy measurement for Chiller Systems and Condensers. With LCD Display and Robust Keypad Membrane, the meter can display instantaneous energy in KW/TR, temperature, temperature differentials, flow rate, approach temperatures and also provide feedbacks for Low Brine Flow, Low Brine Temperature, Low Condenser Water Flow and High Ammonia Temperature. The meter can also communicate with DCS/SCADA/PLC systems via RS485 Modbus.

## CUSTOM AUTOMATION PANELS FOR REFRIGERATION PLANTS



**Compressor Automation Panel**



**SS Panel**



**LP Vessel**



**Cold Room Automation Panel**

Manik Engineers is a well known supplier of Electrical Automation Panels for the Refrigeration Industry. Custom Automation panels for Compressor capacity control, LP vessel Automation for Liquid Level control, Liquid Ammonia Pump Automation, Cold Room Temperature Control Panels, Hot-Gas / Gravity Defrost Panels, Complete Plant automation panels, Ammonia Leak Detector Panels and various other panels as per customer and industry

needs are supplied. All Panels are fabricated from CRCA sheets and are duly powder coated. The panels are manufactured and assembled by experienced technicians. A hard-copy of wiring schematic is provided with the control panel. All wiring internal to the panel is factory-tested for continuity prior to shipment by expert technicians.

## INNOVATIVE ENERGY SAVING SOLUTIONS FOR REFRIGERATION SYSTEMS

### DESUPERHEATER



'Tube-in-Tube' type 'counter flow' heat exchanger gives 3% to 5% Power saving of Compressor motor.

Free hot water for

- a) Boiler make-up water
- b) Heating of reactors & autoclaves
- c) Hot water supply for guest rooms in hotels
- d) Washing & Cleaning
- e) Dehumidifiers

#### ADVANTAGES

- Large saving in fuel & electricity bills.
- Reduced load on condenser results in possible saving of electricity for condenser pump & cooling tower fan.
- Eliminates Scaling of Condenser
- Zero Maintenance

### HEAT RECOVERY SYSTEM



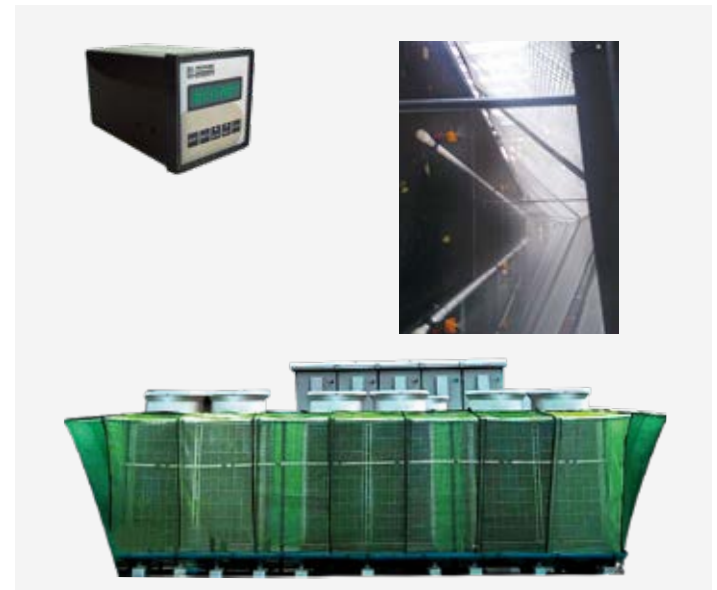
#### HEAT PIPE HEAT EXCHANGER FOR ENERGY CONSERVATION

Converts hot to cold and cold to hot. Can be used for air, water, liquid and gases medium. Operating temperature 0°C to 600°C Unique individual pipes which are easy to maintain / service

#### HEAT PIPES FOR HEAT RECOVERY

- Utilizing a heat pipe, thermal energy can be recovered from warmer air and added to cooler air.
- In temperate climates this permits energy saving to be realized through preheating of the outside air. Conversely, in hot climates the savings are associated with pre-cooling of the outside air.

### ADIABATIC COOLING SYSTEM : ECONET



**INTRODUCTION :** EcoNet concept is based on intermittently and efficiently evaporating water on a large area in front of the heat rejection surface of Mini - Split, Rooftop, Air Cooled Chillers, Condensers and Dry Coolers.

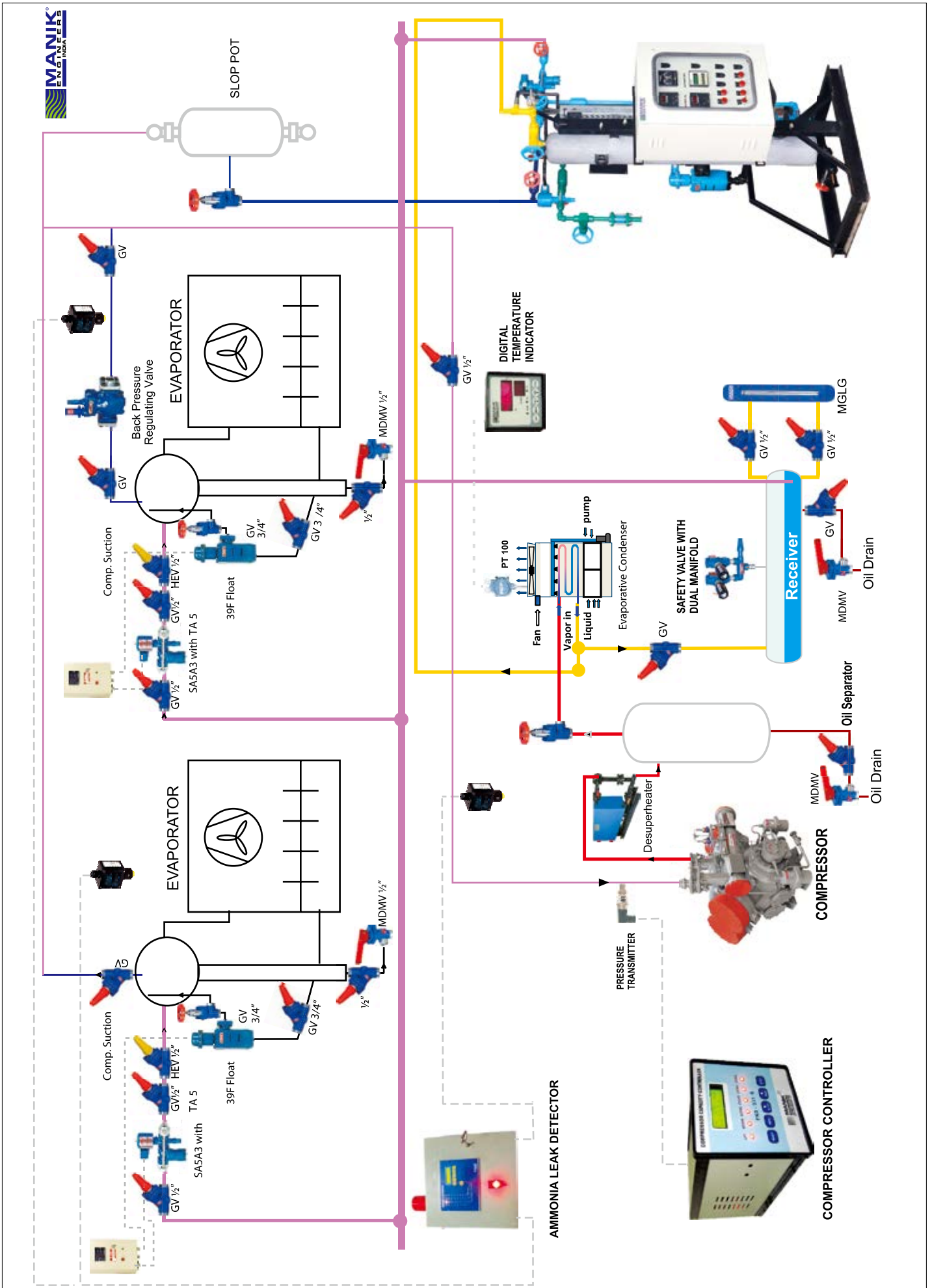
**FEATURES :** Water Spray System, Quick change type plastic nozzles connected in series or parallel arrangement in order to provide uniform coverage area for an effective evaporation process. Nozzles are designed to operate with very low pressure and they can operate with normal city mains water pressure 1.5 bar g (21 psi g) / (15m) and above.

**ECONET :** Non metallic mesh provides an effective coverage area for an efficient evaporation surface with minimal air pressure drop. Meshes are fixed in front of the heat rejection surface via spacer bars and / or fixing brackets to suit the unit configuration. Various size sectional mesh panels are either joined together to form a full mesh area or alternatively flexible mesh roll cut to fit to a required size in front of the heat rejection surface. This design provides easy maintenance and replacement for the mesh panels.

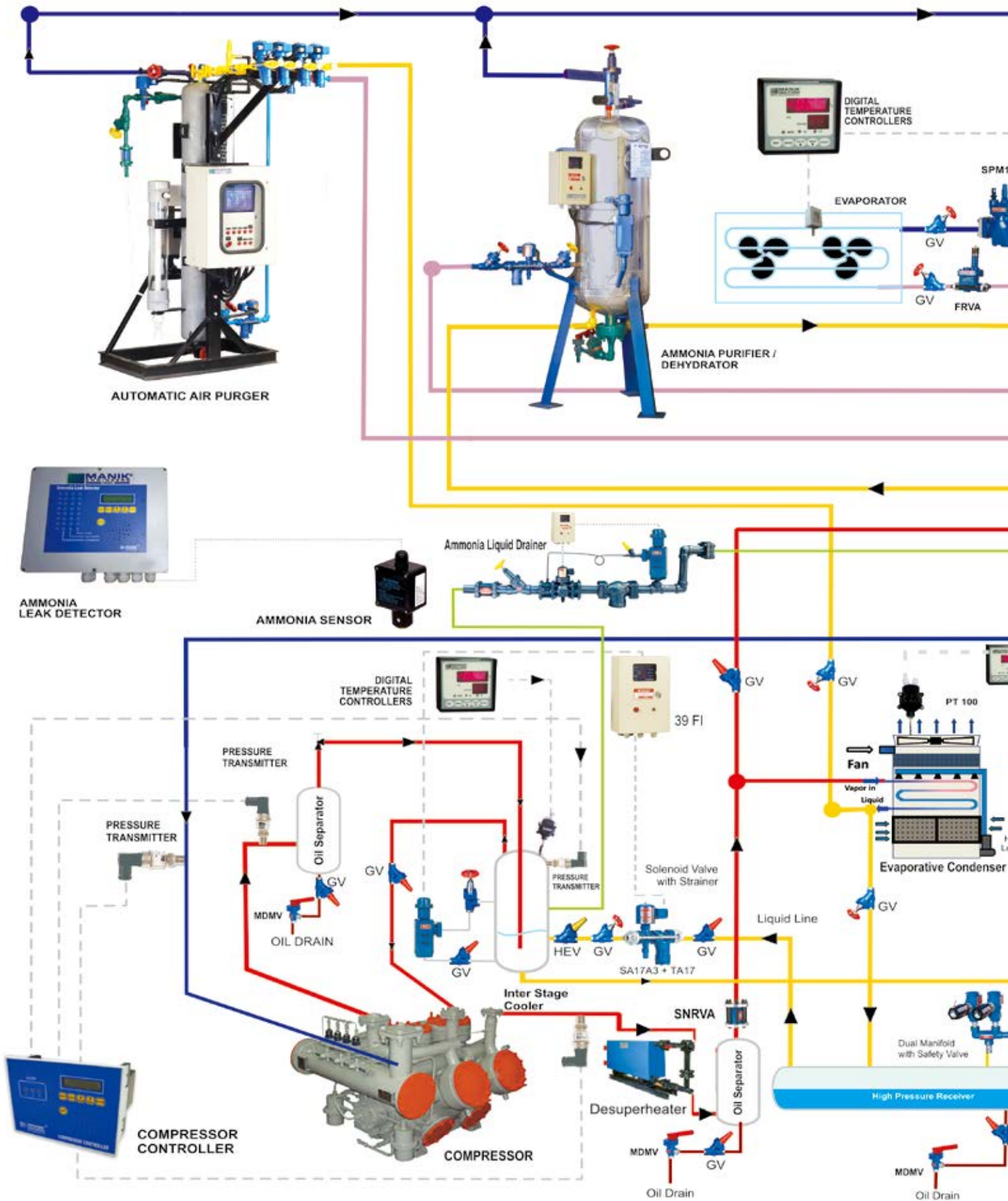
**HUGE SAVINGS ON ENERGY:** Based upon the chiller capacity and weather conditions, upto 10-15kw/hr can be saved. The average ROI for such systems is less than 1 year.



# AMMONIA GRAVITY FEED SYSTEM

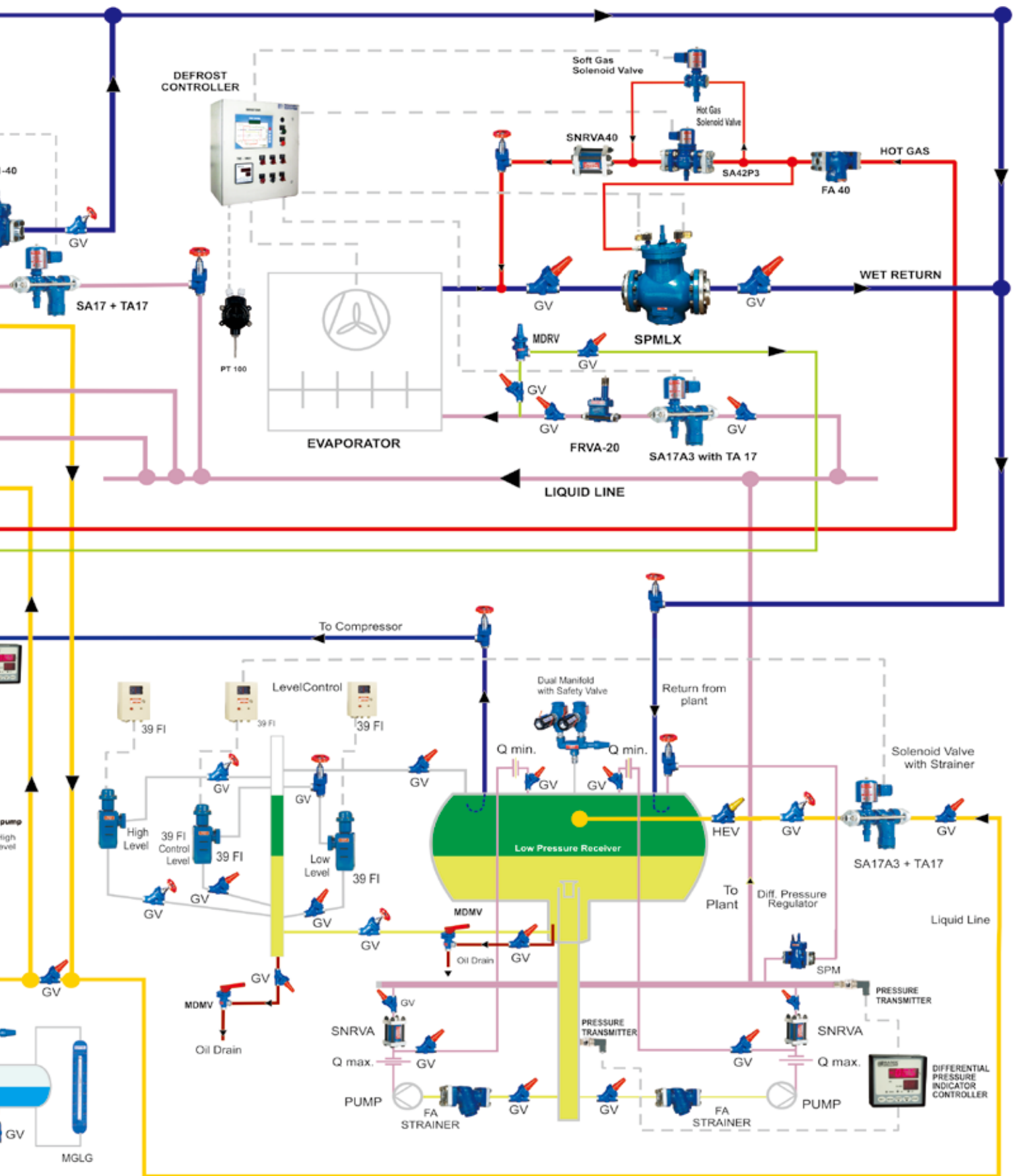


# AMMONIA LIQUID OVERFEED

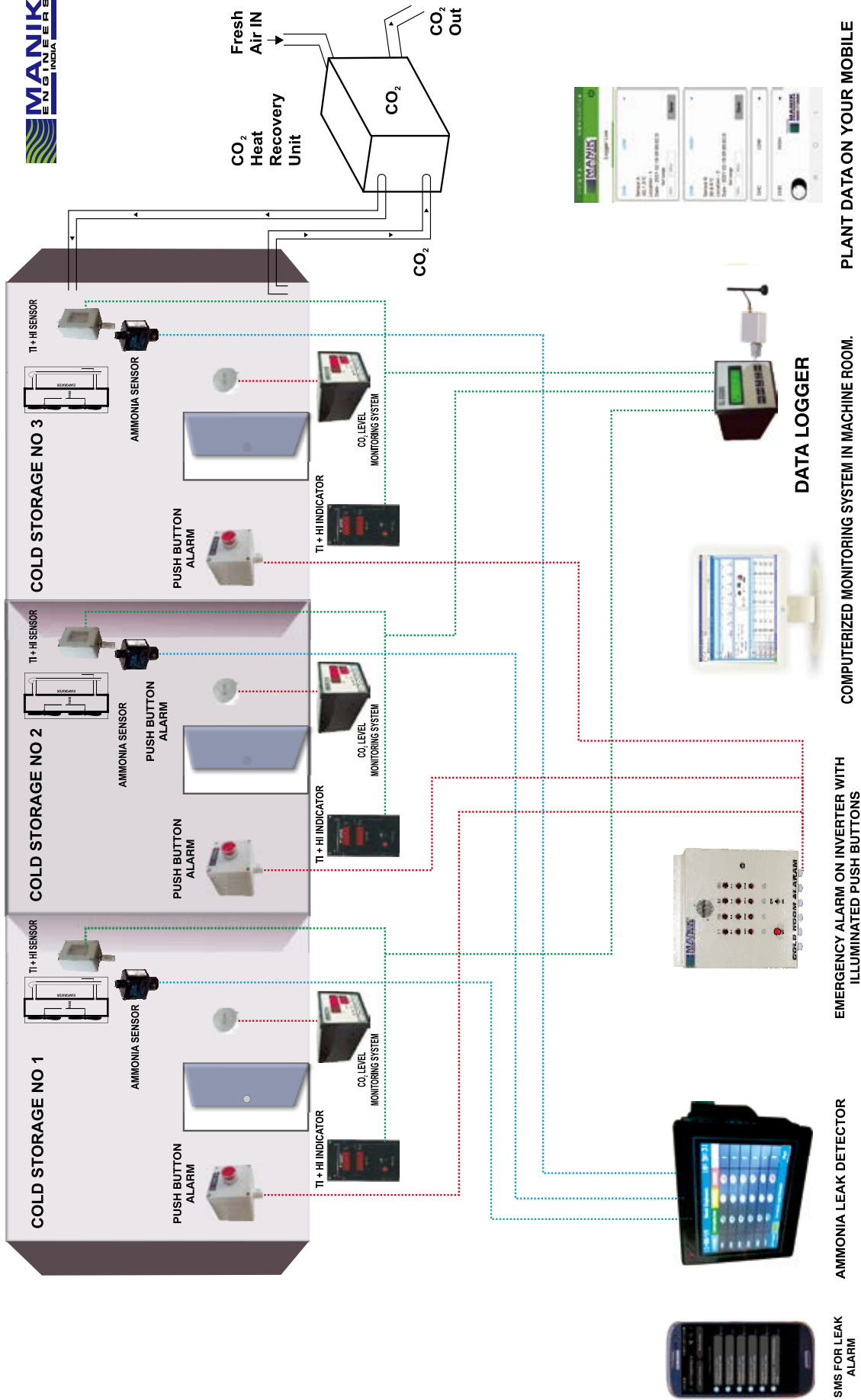




# INDUSTRIAL REFRIGERATION SYSTEM



# COLD STORAGE AUTOMATION



PLANT DATA ON YOUR MOBILE

COMPUTERIZED MONITORING SYSTEM IN MACHINE ROOM.

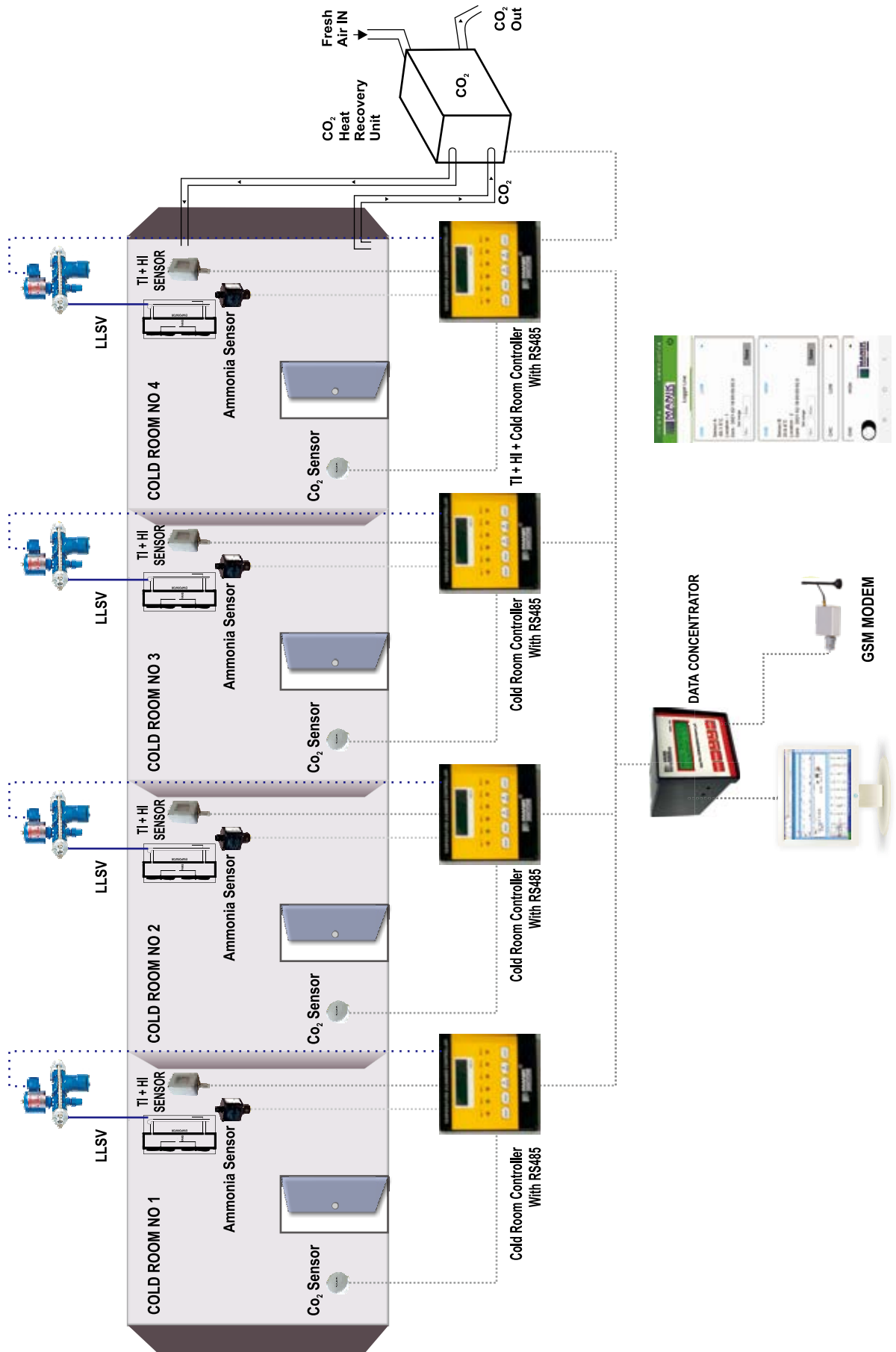
EMERGENCY ALARM ON INVERTER WITH ILLUMINATED PUSH BUTTONS

AMMONIA LEAK DETECTOR

SMS FOR LEAK ALARM



# PLANT MONITORING SYSTEMS



# COMPRESSOR CAPACITY CONTROLLERS

## COMPRESSOR / CHILLER CONTROLLER



MANIK Engineers has introduced new series of Microcontroller based controllers. The new MCC is complete controller to operate compressors / chiller packages / condensing units. It can be used for Multi Cylinder compressor or with RACK system of multiple compressors.

### FEATURES :

- Four Analog inputs ( 4 to 20mA) for pressure transmitter e.g. compressor suction, discharge, oil and intermediate
  - Four Digital inputs (potential free)
  - Six Relay Outputs for Compressor Capacity Control
  - Solenoid Valves and Compressor start stop
  - Interlock for compressor start command
  - Inbuilt time delay for Differential Oil trip
  - Adjustable time delay for capacity control solenoid valves
  - Adjustable Neutral Zone, Inter Stage Differential, Calibration
  - Optional RS232 / RS485 port for communication
  - Compact Single Enclosure unit. can be fitted into the panel
  - Operates directly on 230VAC, 50Hz Supply. No need of auxiliary supply units.
- Simple to use key board 16 X 2 Line LCD Display with Backlight

## SCREW COMPRESSOR CAPACITY CONTROLLER : FKD-40A+41A



FKD-40A+41A is a screw compressor capacity controller widely used with various screw compressors such as KPC-Howdon, Alfa-Laval, Stal, Dunham Bush, APV- J & E Hall, KG Khosla, Sabroe, Cooling Systems CSI etc.

FKD-40A moves capacity slide by operating loading/unloading solenoid valves.

FKD-40A can be used either with RTD ( Pt100 / Pt1000 ) input or pressure transmitter input (4-20mA)

FKD-41A is current limiter which allows to control motor current from 10% to 100% of rated current.

## MICROCONTROLLER BASED COMPRESSOR CAPACITY CONTROLLER : FKD331



The microcontroller based FKD331 is a multistage electronic capacity controller for multi-cylinder reciprocating compressor or rack systems.

LCD Based unit has easy to use settings, like Set point -Low pressure (LP), Neutral Zone (NZ) & Interstage timer.

One Analog input (4 to 20mA) for pressure transmitter e.g. compressor suction or RTD Pt100

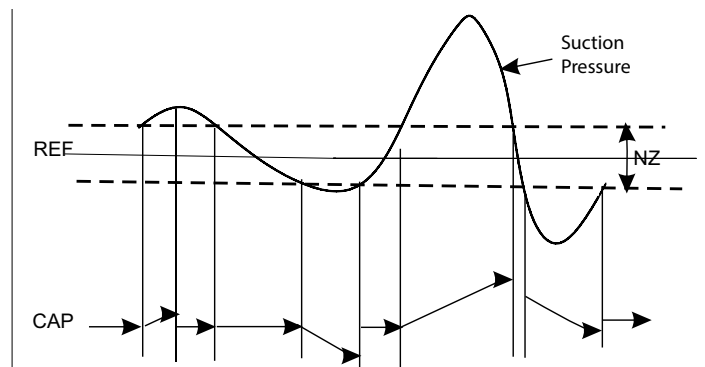
One Digital input (potential free) for Compressor On feedback

Four / Six Relay Output for Compressor Capacity Control Solenoid Valves and Compressor trip

Adjustable Neutral Zone, time delay, Calibration Optional RS232 / RS485 part for communication.

### FUNCTION:

- The cut-in capacity is controlled by signals from the connected pressure transmitter and the set reference.
- Outside the reference a neutral zone is set where the capacity will neither be cut in nor out.
- Outside the neutral zone the capacity will be cut in or out if the regulation registers a will take place with the set time delays.
- If the pressure however "approaches" the neutral zone, the controller will make no changes of the cut-in capacity.
- Cut-in of steps are defined for either sequential or cyclic operation.



## SCREW / PISTON COMPRESSOR AUTOMATION CONTROLLER : SCC40+41 / PCC331



The Manik compressor control PLC provides precise regulation, stable readings even in demanding environments are simple to operate, fast, reliable and built to last.

### FEATURES :

- Operates on 230VAC, 50Hz, with inbuilt power supply for Sensors & Transmitters.
- Precise capacity control based on the successful FKD331 / FKD40+41 logic.
- 7" TFT Colour touch screen graphic display.
- Consolidated overview for multiple parameters in a single controller.
- Standard Current Looped 4-20 mA analog signal output from Transmitters.
- Direct interfacing with RTD Temperature sensors.
- Alarm Hooter(90dB) for quick detection in noisy environments.
- Robust case for long life in harsh environments.
- Easy maintenance / calibration.
- Overload protected.
- IP55 protected enclosure, for panel and wall mounting application.
- LAN / RS485 Modbus protocol for PLC / SCADA interface.



## MICROCONTROLLER BASED COMPRESSOR CAPACITY CONTROLLER : MPRCC



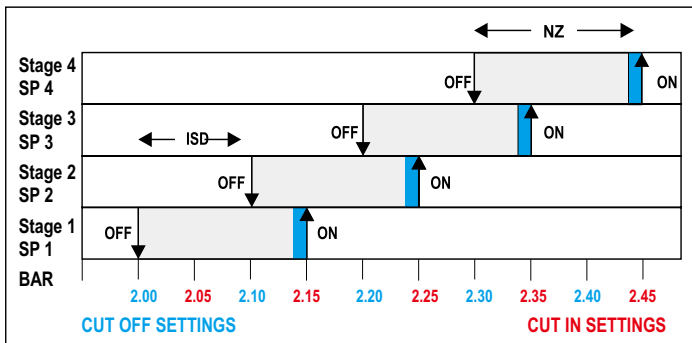
The microcontroller based MPRCC is a multistage electronic capacity controller for multi-cylinder reciprocating compressor or rack systems. LCD Based unit has easy to use settings, like Set point -Low pressure (LP), Neutral Zone (NZ), Inter-stage differential (ISD) & Interstage timer. One Analog input ( 4 to 20mA) for pressure transmitter e.g. compressor suction or RTD Pt100

One Digital input (potential free) for Compressor on feedback  
 Four / Six Relay Output for Compressor Capacity Control Solenoid Valves and Compressor trip  
 Adjustable time delay for capacity control solenoid valves  
 Adjustable Neutral Zone, Inter Stage Differential, Calibration  
 • Optional RS232 / RS485 port for communication

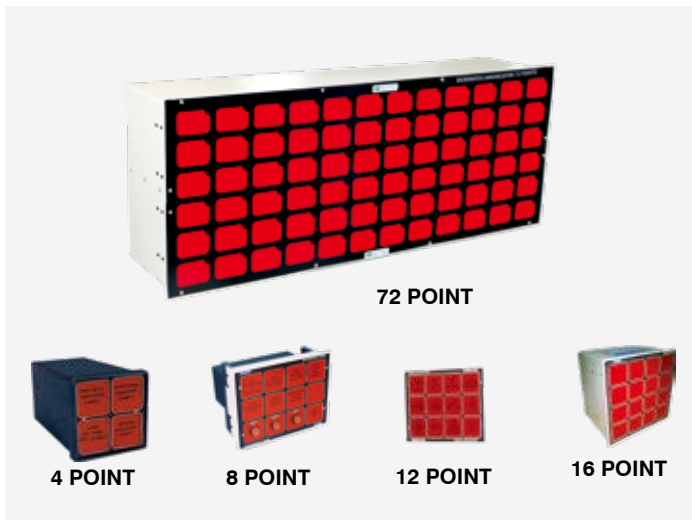
### TYPICAL APPLICATION

MPRCC-04 unit stage control :

Set Point 2.00 bar  
 Neutral Zone 0.15 bar  
 Inter-Stage Differential 0.10 bar



## MULTI POINT ALARM ANNUNCIATORS



### MICROWATCH ANNUNCIATOR

The Microwatch Annunciator is specially designed for tripping of plants such as refrigeration / air conditioning compressors, chillers etc. In such plants each & every fault is important and has to trip the compressor. The unique design has two relays, one for hooter operation & other for ALL SAFETY OK (ASO) contact, which is to be used in series with compressor starter circuit. This eliminates the use of conventional multiple contactor, Relay logic for tripping of compressor. The Microwatch accepts potential free contacts as inputs with a selectable facility for "Make to Alarm" (NO Type) & "Break to Alarm" (NC type), for each individual inputs. Preprogrammed time delays can be provided for individual windows for fault such as Low Differential Oil Pressure (OP) or Low Oil Level etc. Available in 4,8,12,16,30 up to 70 points.

## COMPRESSOR CAPACITY CONTROLLER : PRCC & RCC



PRCC/RCC is reciprocating compressor controller widely used with Kirloskar, Alfa Laval, Sabroe, Battiboi, ACCEL reciprocating compressors. RCC works by operating loading / unloading solenoid valves of a multi cylinder compressor system.

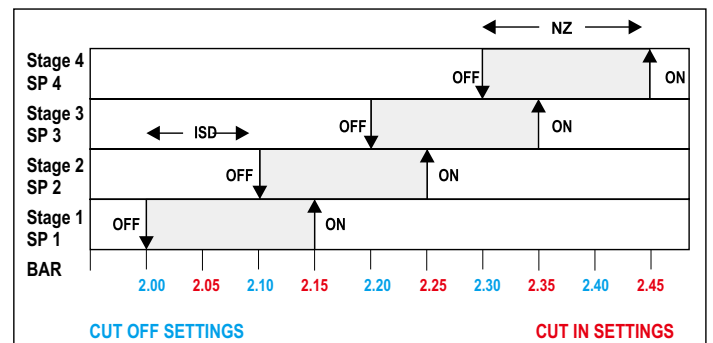
RCC can be used either with RTD (Pt 100 / Pt 1000) Input or PRCC can be used with pressure transmitter input (4 to 20mA).

The controller can be supplied with 4,6,8 steps.

### TYPICAL APPLICATION

PRCC-04 unit stage control :

Set Point 2.00 bar  
 Neutral Zone 0.15 bar  
 Inter-Stage Differential 0.10 bar



## ICE THICKNESS CONTROLLER



Electronic Controller Type ITC is an equipment for automatically controlling the thickness of ice around the chilling tubes in Ice Bank systems. This unit provides an ON/OFF control. When ice is formed around the chilling tube to the required thickness, it automatically cuts off the electric supply to the compressor or Solenoid valve.

The compressor/Solenoid valve is automatically cut-in after 6 mm of melt down of ice. The electronic controller along with a sensor probe assembly forms the complete unit.

# TEMPERATURE PRESSURE, INDICATORS AND CONTROLLERS

## DIGITAL TEMPERATURE INDICATORS / ON-OFF CONTROLLERS

Manik Engineers Temperature Indicators/ Controllers distinguish themselves by features, construction and performance associated with only much costlier controllers.

### FEATURES:

- The front fascia has a bright, easy to read 3 ½ Digit LED display for precise and unambiguous readout of temperature value and set point.
- Automatic negative polarity indication.
- Indicating resolution is 0.1 or 1 digit depending upon the ordered range.
- Multiturn pots enable precise set point adjustment.
- The instruments are available with LED display sizes from ½" to 4".
- Both indicators and controllers are available for Single point as well as multi-point indication and control with up to 6 displays and 6 relay outputs for 6 points.
- Available for both types of RTD sensors – PT100 and PT1000 as well as 4-20mA current transmitters.

- Available for indication and control over a wide temperature range of -70 to 300°C.
- Available in Panel Mounting, Wall mounting and IP65 types for various applications.
- Hysteresis function available for all models to prevent frequent ON/OFF for control equipment.

### APPLICATIONS:

#### ON/OFF control of temperature for,

- Cold Storages
- Fisheries
- Food Processing Units
- Environmental Monitoring
- Refrigeration Plants
- Meat-processing plants
- Pharmaceuticals
- Beverages Plant

Other applications for temperature display and control include Ovens, furnaces, kilns, extruder, environmental test chambers, textile processing machinery, food processing equipment, power generating equipment, electrostatic paint shop, phosphating plants, glass annealing lehrs, thermic, fluid heating systems, boilers and similar systems.

## TEMPERATURE INDICATORS

### PANEL MOUNTING TYPE



TDI 1R01 : 96 x 96 x 150



TDI 1R02 : 96 x 96 x 150



TDI 2R02 : 96 x 96 x 150



TDI 4R04 : 202 x 152 x 200



TDI 6R06 : 202 x 152 x 200

### OTHER SIZES



TDI 1R01 : 96 x 48 x 100



TDI 1R01-1 : 96 x 138 x 100



TDI 2R02-W : 125 x 230 x 100



TDI-8R08-1

### MULTI POINT, MULTI DISPLAY

## WALL MOUNTING TYPE : SINGLE POINT

### VARIOUS DISPLAY SIZES



1/2" Display

TDI 1R01-W



1" Display

TDI 1R01-1-W



2" Display

TDI 1R01-2-W



4" Display

TDI 1R01-4-W

### WITH IP-65 ENCLOSURES



1/2" Display

1" Display

2" Display

TDI 1R01/2-IP65 : 120x125x75

TDI 1R01-1-IP65 : 120x125x75

TDI 1R01-2-IP65 : 250x160x110

### OTHER TYPES



TDI 1R01-Gauge : 125x125x75



TDI 1R01-FLP

Dimensions in mm : H x W x L

## TEMPERATURE CONTROLLERS

### PANEL MOUNTING TYPE : SINGLE POINT INPUT, MULTI POINT OUTPUT



TIC 1R01 : 96 x 96 x 150



TIC 1R02 : 96 x 96 x 150



TIC 1R03 : 96 x 96 x 150



TIC 1R04 : 96 x 96 x 150



TIC 1R05 : 96 x 96 x 150



TIC 1R06 : 96 x 138 x 200

### 2 POINT WITH DUAL DISPLAY

### WALL MOUNTING TYPE

### INDICATORS + CONTROLLERS



TIC 2R02 : 96 x 96 x 150



TIC 1R01-W : 125 x 230 x 100



TIC 2R011 : 96 x 96 x 150

## MICROCONTROLLER BASED MULTI FUNCTION TEMPERATURE CONTROLLERS : MTIC



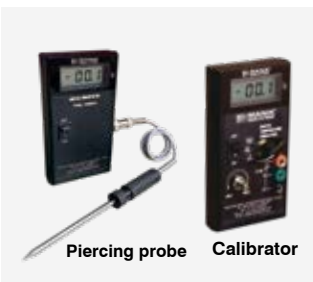
MANIK Engineers has introduced new series of Microcontroller based controllers. The new range of MTIC has many additional features, however, packed in same enclosure. Hence can be used to replace existing TIC range of Controllers Standard DIN Enclosure 96 X 96 X 150 mm Simple to use key board, Dual 7 Segment LED Display

Multiple Set Point options e.g. Single, Two, Three, Four, Five Range - 100°C to +200°C, Resolution 0.1°C, Accuracy ±0.2°C

#### FEATURES :

- Hysteresis ( Neutral Zone) adjustable 0.1°C to 10 °C
- Calibration Adjustable ±20°C
- Relay output • Optional Time delay for Relay Output
- Optional RS232 / RS485 port for communication
- Optional available Software for PC monitoring

## HANDHELD DIGITAL BATTERY OPERATED TEMPERATURE INDICATOR AND TEMPERATURE CALIBRATOR



Piercing probe Calibrator

In response to today's ever-increasing demand for speed, accuracy and performance at an affordable price, MANIK Engineers has introduced the Handheld Digital Thermometers.

The MANIK Handheld Digital 2000 Series provides precise, stable readings, even in demanding environments. They are simple to operate, fast, reliable and built to last. Some measurements take minutes

using standard thermometers due to poor thermal conductivity in the item being measured. Often a highly accurate answer is not required and an indicative answer showing that the reading is above or below a desired threshold will suffice.

The Manik Temperature Calibrator is a an easy to use calibration tool which simulates RTD sensor to quickly and precisely calibrate Temperature indicators and controllers on site.

#### FEATURES:

- On/off switch on front side.
- Operates on easily available standard 9V battery cell.
- Available for any RTD Pt-100, Pt-1000
- Single instrument to read temperature with various installed RTD
- Speed Read for quicker indicative readings
- Robust case for long life in harsh environments

## DIGITAL GAS INDICATORS & INDICATING CONTROLLERS



In response to today's ever-increasing demand for speed, accuracy and performance MANIK Engineers has introduced the Digital Gas Indicators & Indicating Controllers for Cold Chain Solutions. The MANIK Digital Gas Indicators & Indicating Controllers Series provides precise, stable readings, even in demanding environments. They are simple to operate, fast, reliable & built to last. Today's cold chain requires not only the temperature and humidity measurement but also percentage of gas for Ethylene, Carbon Dioxide, Oxygen & Nitrogen.

#### FEATURES:

- Standard Enclosure for panel and wall mounting application
- Operates on 230VAC, 50Hz, with inbuilt power supply for gas transmitters
- Available for gases such as Ethylene, Carbon Dioxide, Oxygen & Nitrogen.
- Robust case for long life in harsh environments

## DIGITAL PRESSURE INDICATORS AND INDICATING CONTROLLERS



DPIC

MPIC

Industrial Electronic Instrumentation aims at measurement and control of process variables at maximum efficiency and minimum cost. Many times process parameters are located at remote distances and needs to be monitored / controlled at single point. "MANIK" make Digital Pressure Indicator/ Indicating Controllers are designed to serve to today's automation requirements

#### FEATURES:

- Precise measurement of pressure with resolution of 0.01 bar.
- Various options are available
- Pressure Indicator
- Pressure Indicating Controller Indicator Single and Multiset Point
- Differential Pressure Indicator and Indicating Controller
- Inbuilt power supply for Pressure Transmitter
- Accuracy can be up to ±0.25%

- Input 4 to 20 mA or 0 to 5 VDC or 1 to 5 VDC
- Fast response • Optional RS485 port for communication.
- Available display size 1/2", 1", 2", 4"

#### APPLICATIONS:

- Quality Control Laboratories
- Green Houses
- Refrigeration Plants Etc.
- Fisheries, meat-processing plants etc.
- Testing Chambers
- Cold Storage
- Weather stations
- Pharmaceuticals

#### MODELS:

- PDI1P01 Single Point Indicator
- PIC1P02 Two Point Controller
- PIC1P04 Four Point Controller
- PIC1P06 Six Point Controller
- DPIC2P02P Ammonia Pump
- PIC1P01 Single Point Controller
- PIC1P03 Three Point Controller
- PIC1P05 Five Point Controller
- DPIC2P02AP Air Purger
- MPIC- single Port control (RS485)



## MULTI CHANNEL TEMPERATURE SCANNER



MANIK Engineers TSA series Scanner is an excellent instrument to monitor temperature/pressure from multiple points at a single point. It is extremely suitable for monitoring parameters at various places in air conditioning/refrigeration plants. An LED is provided for each channel for quick identification of the reading being displayed. Input Sensors  
RTD - PT100 or PT1000  
Pressure Transmitter (4-20 mA)

### FEATURES :

Display : 3 ½ Digit, ½" 7 Segment LED Display.  
Supply : Standard 230 VAC  
Optional : 110VAC/24VAC/DC  
Output (Optional) : Potential free change over contacts for 230 VAC, 10A max. resistive load.

## DIGITAL TEMPERATURE / PRESSURE / HUMIDITY SCANNER CONTROLLER WITH MODBUS : PTHSC-08, PTHSC-16



### Introduction:

The PTHSC-08/16 provides dual function of monitoring and controlling pressure/temperature/humidity for up to 8/16 inputs. Fast response time and accurate measurement makes this device perfect for Precise Control. It supports RS-485 Modbus communication for seamless interfacing and monitoring to DCS/SCADA systems.

### Features:

Power supply : 230VAC / 110VAC / 24VDC  
Display : 16X2 LCD  
Auto/Manual Mode : Auto mode as per scan time (0-99Sec)  
Manual Mode Advance by Keypad.  
No. of Inputs : 8 / 16 Nos.  
Inputs & Ranges : Temperature (PT100 / PT1000):  
-50 to +150 °C  
Humidity (4-20mA) : - 0 to 100%RH  
Pressure (4-20mA) : -1 to 5Bar,  
-1 to 10Bar, -1 to 25Bar  
No. of Outputs : 8 / 16 Relay outputs  
(1 output for each input)  
Output type : SPDT Relay. Rated current - 5A @ 230VAC  
Resolution : Pressure - 0.1 Bar  
Temperature - 0.1°C  
Humidity - 1 %RH  
Enclosure : IP54  
Enclosure Mounting : Panel mounting  
Parameters Displayed : Pressure (Bar/Psi)  
Temperature (°C/ °F)  
Humidity (%RH)  
Set Points for each channel  
LED Indications : Each Relay Output.  
Communication : RS485 Modbus

## DATA CONCENTRATOR



The new Manik Data-concentrator connects to various Maniks instruments such as MTIC, MPIC, Ammonia leak Detector etc over RS485 and send data from these instruments to the new Manik PC software for data logging/analysis and report generation. Upto 8 instruments can be connected to the Data-concentrator. It also has an inbuilt display to check readings of multiple instruments from a single point.



## DIGITAL TEMPERATURE + RELATIVE HUMIDITY INDICATORS AND INDICATING CONTROLLERS



- Combined measurement of Temperature & Relative Humidity.
- Simultaneous display of both Parameters Temperature & Relative Humidity. Various options are available.
- Temperature + Relative Humidity Indicator.
- Temperature Indicating Controller + Relative Humidity Indicator.
- Temperature Indicator + Relative Humidity Indicator Controller
- Temperature Indicating Controller + Relative Humidity Indicator Controller
- Inbuilt power supply for Temperature + Humidity Transmitter
- Accuracy can be up to 1.5% for Relative Humidity & 0.5% for Temperature
- Humidity Range 0% to 100%.
- Temperature Range-40°C to 80°C
- Fast response
- Available display size ½", 1", 2", 4"

## DATA LOGGER



Multipoint Temperature / Pressure / Humidity Sensors can be interfaced with the Datalogger. Direct Printer interface is available along with monitoring / storage / online viewing in real time.

### WEB BASED DATA LOGGER

The unit can be controlled online and online monitoring from any web browser is possible. Now you can monitor your plant from anywhere in the world with all new web based data logger system. You can also get notifications on your mobile of HIGH/LOW set points. Mobile App can be download from [www.manikengineers.com](http://www.manikengineers.com). Also available at App Store/Play store.

For demo log on to:

<http://202.149.193.118:8080/mlogger1.1/>

User Name **maniks2**

Password **datalogger2**

# SENSOR AND TRANSMITTERS

## ELECTRONIC TEMPERATURE SENSORS AND THERMOWELLS



PT100, PT1000 type RTD sensors are available for various applications such as for cold storages, refrigeration plants, food processing units, industrial processes, Heating/Cooling systems, Laboratories, Heat Exchangers etc. These are available for in various types - Pencil type for external tube fitment, standard immersion type with thermowells, Flame Proof type, Head Mounted type and Free air type for ambient temperature measurement, with various lengths and dimensions. Thermowells are available with SS304, or SS316 material with 1/2", 3/4" process connection. Special type of sensors are also available upon request.

## ELECTRONIC TEMPERATURE + HUMIDITY SENSORS AND TRANSMITTERS: FKH SERIES



### FEATURES

- Compact enclosure IP65.
- Highly stable.
- Humidity span 0% to 100%.
- Temperature compensated
- Resistant to volatile organic compounds.
- Accuracy + 2%
- DC operation
- Fast response

### AVAILABLE MODELS

- Humidity Transmitter Voltage Output FKH14
- Humidity Transmitter Current Output FKH14-I
- Pt100 + Humidity Sensor Voltage Output FKH14R
- Pt100 + Humidity Transmitter Current Output FKH14O
- Temp. Humidity Transmitter Both Current Output FKH240
- Temp. Humidity Transmitter Current Output Compensated FKH240-C

## CO<sub>2</sub> PORTABLE HANDHELD DEVICE



- State-of-the-art non-dispersive infrared (NDIR) technology to measure carbon dioxide gas in parts-per-million (ppm)
- Data output RS232 (optional)
- Displays the current carbon dioxide temperature on a large LCD
- Displays TWA (8hours) STEL (15 minutes) Min, Max and average values
- Internal automatic self-diagnostic function
- Audible alarm, Easy to calibrate
- Measurement Range : 0 - 10000 ppm
- Measurement Temperature : 0°C - +50°C

## PRESSURE TRANSMITTERS



Manik Engineers pressure transmitters offer high levels of stability and reliability with proven sputtered thin film technology and unbeatable price performance ratio in a small package size. A broad choice of electrical and pressure connections allow stock configurations to suit most applications without modification.

- Exceptional Long Term Stability.
- 1/4" NPT connection for the perfect seal.
- Available in range from -1 to 50 Bar.
- Industry Standard 4-20mA output for easy interfacing.
- Burst pressure of 100Bar.

## SIGNAGES



The Manik Engineers Exit Sign is designed for extremely cold and wet-locations and is built to resist impact and corrosion.

### FEATURES

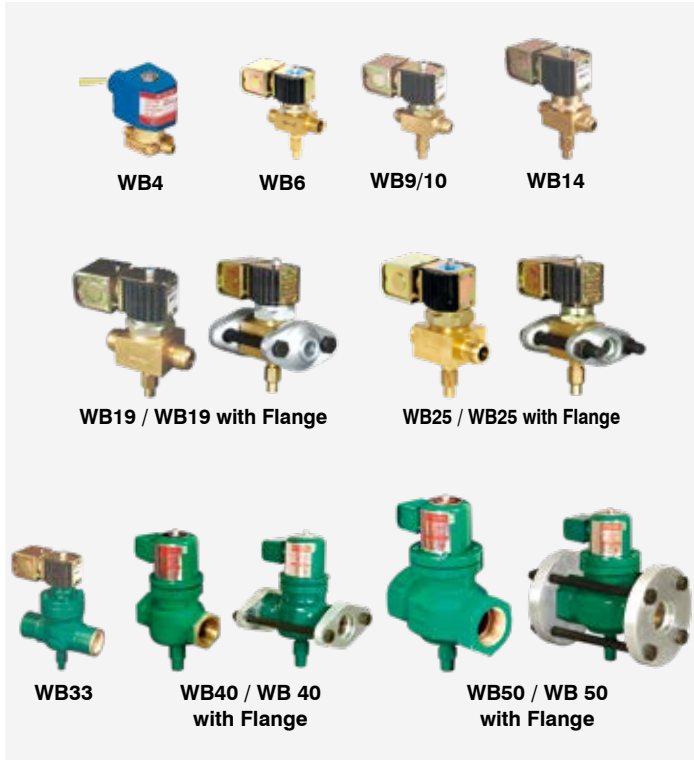
- High Intensity LEDs
- Single or Double Face
- Universal Mounting
- IP65 Enclosure

### MOUNTING

Polycarbonate mounting included for top or end mount. Intended Use. Freezers, Outdoors, Roof Tops, Factories, Warehouses, Cold Environments.

# INDUSTRIAL SOLENOID VALVE AND CONTROLS

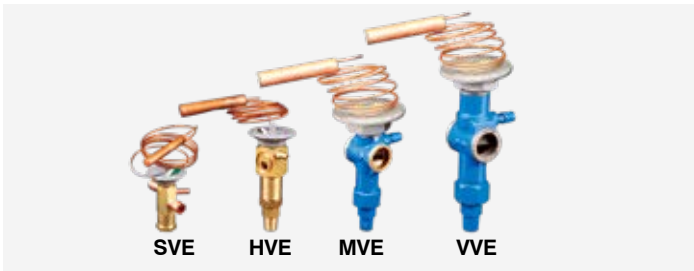
## INDUSTRIAL SOLENOID VALVES : WB SERIES



### FOR AIR, WATER, BRINE, STEAM AND LIGHT OIL

These valves are suitable for most types of industrial applications. Ideal for water, light oil, airline to chucking devices, brine, pilot valve to pneumatic controls, low pressure steam. Available from 1/8" port size to 2" with piston operation and stainless steel insert seat. Also available in Threaded and Flange types". "Normally Open type valves are also available on request

## THERMOSTATIC EXPANSION VALVE : SVE, HVE MVE, VVE



The Thermostatic Expansion Valve (TEV) controls the flow of liquid refrigerant entering the direct expansion (DX) evaporators maintaining a constant super heat of the refrigerant vapour at the outlet of the evaporator.

Type SVE2,3,4,5,8,10 are external equaliser with solder connections.

Type HVE 7,11,16,20, MVE21,34,42 VVE52,70,100 are external equaliser with weldable flange connection.

Various ranges of the power assemblies are available from +20°C to -40°C

## SUCTION ACCUMULATORS : MAS



Suction Accumulators feature an inlet deflector that bends refrigerant flow to prevent internal splashing and facilitates the collection of refrigerant oil in the bottom connection of the accumulator

Available in 3-5 TR, 5-7 TR, 7-10 TR Models.

## SOLENOID VALVES FOR FLUORINATED REFRIGERANTS



MB series is a direct or pilot operated Solenoid Valve. These valves can be supplied with either Flanged type, Solder, or male / female pipe thread type connections. The problem of the integral body material seats in Solenoid Valves getting deteriorated very rapidly is eliminated by using stainless seat insert in place of usual body material.

Extended solder connections are available on request.

These valves are suitable for all fluorinated refrigerants such as R22, R502, R134A, R404A etc.

## DISCHARGE GAS BYPASS VALVE : ADSRAE-2



Discharge Bypass Valve is used to bypass a portion of the hot discharge gas directly into the low side to limit the minimum evaporating pressure during periods of low load either to prevent coil icing or to avoid operating the compressor at a lower suction pressure than it was designed to operate. This valve, which opens on a decrease in suction pressure, can be set to automatically maintain a desired minimum evaporating pressure regardless of the decrease in evaporator load.

Suitable for R22, R134a, R404a, R407C  
Connection : 5/8" Solder

## FLOW SWITCH : FS SERIES



The FS-100 offers accurate flow detection, with 1% repeatability, over a broad range of flow settings. Its durable construction delivers long-life reliability in either water or oil. Generous flow paths keep pressure drop low. These switches are ideal for detection of improper flow rates in high volume lubrication, cooling or process systems.

FS-100 Adjustable Series switches offer the same accuracy and are as rugged as those with fixed settings, but provide one additional feature: **external adjustability**.


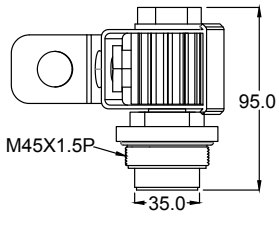

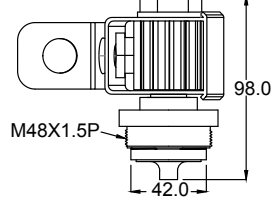

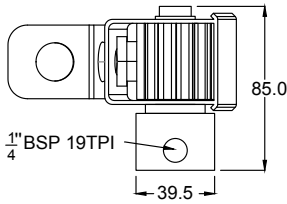

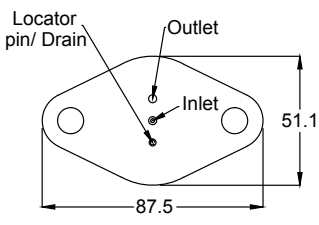

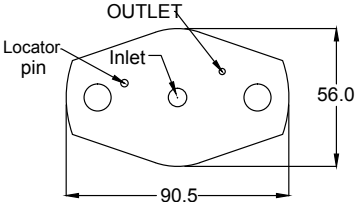

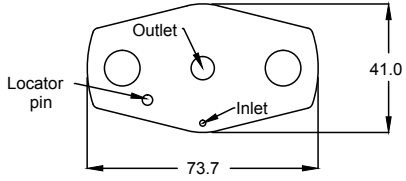

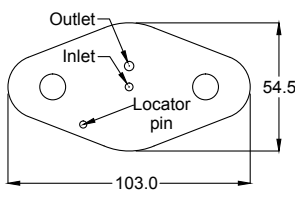

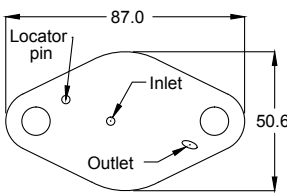
With these versatile switches your choice of flow settings is diverse within a given range. An ordinary, flat-blade screwdriver is all that's required for the actuation adjustment.

SS Series flow switches are suitable for refrigeration.


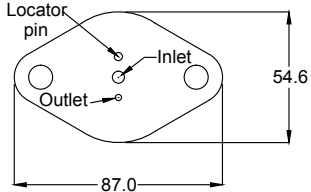

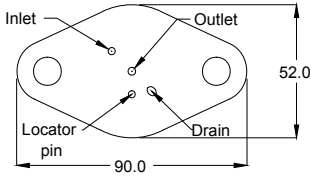

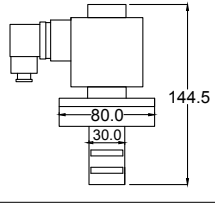

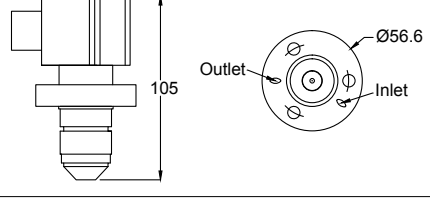

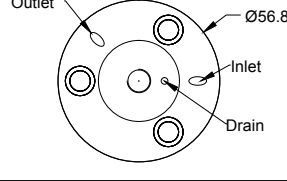

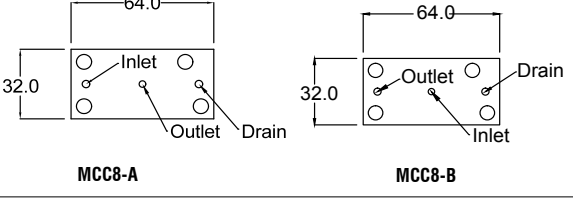

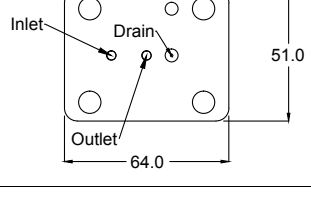

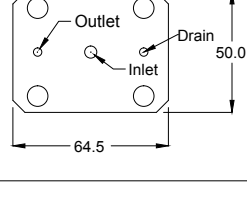

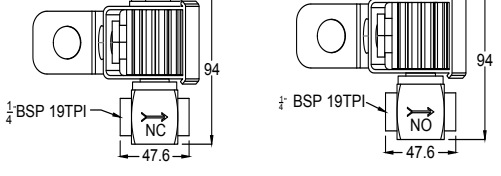
These are available in 1/2", 3/4" BSP, 5/8" UNF, as well as 1/2" / 3/4" Butt weld connections.



# COMPRESSOR CAPACITY CONTROL SOLENOID VALVES

MODEL NUMBER	PHOTO	COMPRESSOR / COMPANY	DIMENSIONS (mm)
MCC1		MCC-1 : Start unloader for Bock Compressor	
MCC1-A		MCC-1A: Capacity regulator for Bock Compressor	
MCC2		Frick, Eclipse, Mycomp	
MCC3		MC Quay, Bitzer, CSH	
MCC12		Bitzer, Comer	
MCC13		Bitzer, Comer, Hanbell etc.	
MCC15		Refcomp, Emerson (SRCS)	
MCC16		Emerson	

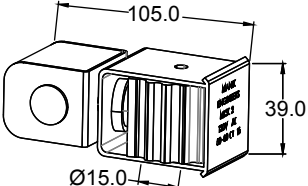
MANIK MCC Series Compressor Capacity Control Solenoid Valves MCC series compressor cylinder end unloading solenoid valves are a kind of capacity adjusting valves developed as per requirements of OEM Compressor Manufacturers. They are generally mounted on the cylinder lid of refrigeration compressor or on the body of the compressor.


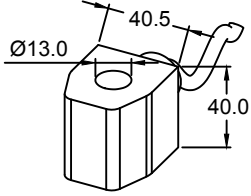

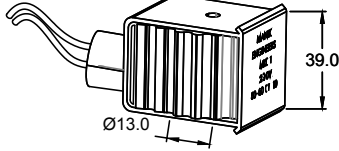

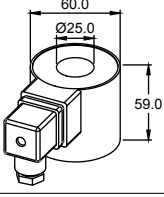

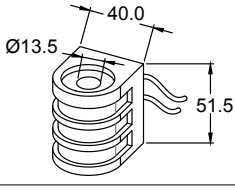

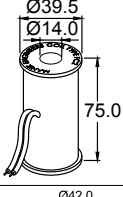

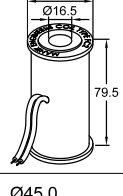

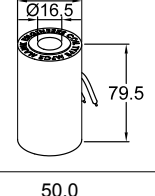

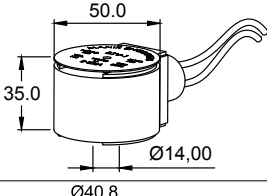

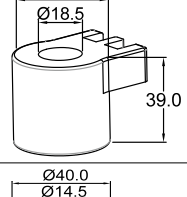

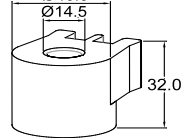
MODEL NUMBER	PHOTO	COMPRESSOR / COMPANY	DIMENSIONS (mm)
MCC20		Copland (6RS)	
MCC21		Bitzer 0574 Series	
MCC6 BK33		Bock Old Kirloskar FK&GK Kirloskar	
MCC7-A		Carrier Carlyle	
MCC14-A		Carrier Carlyle	
MCC8-A MCC8-B		Blue Star, York, J Series	
MCC9		Mycom	
MCC17		York	
MCC4-NC MCC5-NO		CSI Screw NC&NO type	

MODEL NUMBER	PHOTO	COMPRESSOR / COMPANY	DIMENSIONS (mm)															
MCC10-SCVH + NC  MCC11 - SCVH + NO		Arzner, Howden Screw NC  Arzner, Howden Screw NO																
MCC19  MCC 19-SS		Mycom - 3/8", Sabroe - 1/4"																
MCC18		Sabroe, SMC, Oil Return Solenoid Valve																
MCC22		Mycomp MLKN series compressor																
MCC23		Mycomp MLKN series compressor																
MCC25		J & E Hall Direct Mounting																
SVRF 104 SVRF 106 SVRF 108 SVRF 116		Sabroe SMC	<table border="1"> <thead> <tr> <th>POSITION</th> <th>MODEL NO.</th> <th>DIMENSIONS</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>SVRF 104</td> <td>108 mm</td> </tr> <tr> <td>B</td> <td>SVRF 106</td> <td>160 mm</td> </tr> <tr> <td>C</td> <td>SVRF 108</td> <td>210 mm</td> </tr> <tr> <td>D</td> <td>SVRF 116</td> <td>210 mm</td> </tr> </tbody> </table>	POSITION	MODEL NO.	DIMENSIONS	A	SVRF 104	108 mm	B	SVRF 106	160 mm	C	SVRF 108	210 mm	D	SVRF 116	210 mm
POSITION	MODEL NO.	DIMENSIONS																
A	SVRF 104	108 mm																
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SMO 108		Sabroe CMO																



# COILS FOR SOLENOID VALVES AND LEVEL CONTROLLER

COIL TYPE	PHOTO	SUITABLE FOR FOLLOWING VALVES	VOLTAGE / WATTAGE	DIMENSIONS (mm)
<b>SOLENOID COIL - KC-3</b>		SA5A3, SA17A3, SA32P3, SA42P3, SA50P3	230 VAC 110 VAC 24 VAC  WATTAGE : 18	
<b>SOLENOID COIL - MKC-31</b>		SA5A3, SA17A3 Suitable for MOPD / 150 PSI only	230 VAC 110 VAC 24 VAC  WATTAGE : 18	
<b>SOLENOID COIL MOULDED - MKC-32</b>		SA32P3, SA42P3, SA50P3 Suitable for MOPD / 150 PSI only	230 VAC 110 VAC 24 VAC  WATTAGE : 18	
<b>COIL MOULDED - MKC-33</b>		SA5A3, SA17A3, SA32P3, SA42P3, SA50P3	230 VAC 110 VAC 24 VAC  WATTAGE : 18	
<b>MKSV-10 (10W) MKSV-13 (13W)</b>		SPM1, SPM3, SPMLX, MPSV-NC, MPSV-NO, MRASV, SVRF, CAPACITY CONTROL	230 VAC 110 VAC 24 VAC 110 VDC 24 VDC  WATTAGE : 10W / 13W	
<b>SOLENOID COIL MKSV-1</b>		SPM1, SPM3, SPMLX, MPSV-NC, MPSV-NO, MRASV, SVRF, CAPACITY CONTROL	230 VAC 110 VAC 24 VAC 230 VDC 110 VDC 24 VDC  WATTAGE : 17.5	
<b>MKSV-1 FOR FLAMEPROOF HOUSING</b>		SPM1, SPM3, SPMLX, MPSV-NC, MPSV-NO, MRASV, SVRF, CAPACITY CONTROL	230 VAC 110 VAC 24 VAC 110 VDC 24 VDC  WATTAGE : 17.5	
<b>SOLENOID COIL - HKC-1</b>		MS7A, MS8A, MSA4A	230 VAC 110 VAC 24 VAC  WATTAGE : 18	
<b>SOLENOID COIL - MKC-2</b>		WB SERIES, E SERIES, MB SERIES	230 VAC 110 VAC 24 VAC 230 VDC 110 VDC 24 VDC  WATTAGE : 18	

COIL TYPE	PHOTO	SUITABLE FOR FOLLOWING VALVES	VOLTAGE / WATTAGE	DIMENSIONS (mm)
SOLENOID COIL - SMK-1		WB SERIES, E SERIES MB SERIES, ALCO CAPACITY CONTROL	230 VAC 110 VAC 24 VAC 230 VDC 110 VDC 24 VDC WATTAGE : 8	
SOLENOID COIL - MKC1 / TKC1		WB SERIES, E SERIES, MB SERIES	230 VAC 110 VAC 24 VAC 230 VDC 110 VDC 24 VDC WATTAGE : 8	
SOLENOID COIL - BK33		CAPACITY CONTROL BK-33	230 VAC 110 VAC 24 VAC 230 VDC 110 VDC 24 VDC WATTAGE : 30	
MVC-1		VILTER COMPRESSOR LOADING / UNLOADING SOLENOID VALVES	230 VAC 110 VAC WATTAGE : 8	
FLOAT COIL - FC1		LEVEL CONTROLLER LC101AI	24 VAC WATTAGE : 8	
FLOAT COIL - FC2		LEVEL CONTROLLER 39F, 39FI	24 VAC WATTAGE : 8	
FLOAT COIL - MFC2		LEVEL CONTROLLER 39F, 39FI	24 VAC WATTAGE : 8	
BSV1		YORK / BLUESTAR COMPRESSOR	230 VAC 110 VAC WATTAGE : 11	
MAS-1		AVCON AND OTHER SIMILAR MAKES	230 VAC	
MAC-1		AVCON AND OTHER SIMILAR MAKES	230 VAC 110 VAC	



# CERTIFICATES AND APPROVALS



**CERTIFICATE OF INTERNAL PRODUCTION CONTROL FOR PRESSURE EQUIPMENT ACCORDING TO EUROPEAN DIRECTIVE 2014/68/EU (MODULE A2)**

**EURO CERT**

Annex A to the certificate No. : 10.07.11118

PRODUCT	TYPE	DN (MM)	PN (BAR)	FLUID GROUP
STOP VALVES (STOP-CHECK/STOP-CHECK/STOP)	WSPM, WSPM, WSPM & WSPM	50-80	10	1.2.1
PRESSURE REDUCING VALVES	SPM & SPKA	50-80	25	1.2.1

MANIK ENGINEERS  
180, RATNA DEEP, L. B. SHASTRI ROAD, PUNE 411 030, MAHARASHTRA, INDIA

**ANNEX A TO THE CERTIFICATE No. : 10.07.11118**

**TECHNICAL DESCRIPTION OF PRESSURE EQUIPMENT**

PRODUCT	TYPE	DN (MM)	PN (BAR)	FLUID GROUP
STOP VALVES (STOP-CHECK/STOP-CHECK/STOP)	WSPM, WSPM, WSPM & WSPM	50-80	10	1.2.1
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**TIC**

Report No. TIC/19/10014

**Dr. Nitish J. Desai, Director**

MANIK ENGINEERS  
180, RATNA DEEP, L. B. SHASTRI ROAD, PUNE 411 030, MAHARASHTRA, INDIA



**MANUFACTURER DECLARATION**

MANIK ENGINEERS  
180, RATNA DEEP, L. B. SHASTRI ROAD, PUNE 411 030, MAHARASHTRA, INDIA

**CERTIFICATE**

QA TECHNIC - ATTESTATION OF CONFORMITY

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180, RATNA DEEP, L. B. SHASTRI ROAD, PUNE 411 030, MAHARASHTRA, INDIA

CE

**QA TECHNIC**

ATTESTATION OF CONFORMITY

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180, RATNA DEEP, L. B. SHASTRI ROAD, PUNE 411 030, MAHARASHTRA, INDIA



OFFICE : 180, RATNA DEEP, L. B. SHASTRI ROAD, PUNE 411 030. MAHARASHTRA (INDIA)

PHONE : +91 (20) 2453 1417 / 2453 3102

TELEFAX : 2453 8617

MOBILE : WHATSAPP : +91 9823087626

E-MAIL : anand@manikengineers.com

WEBSITE : www.manikengineers.com