MICRO THERMO TECHNOLOGIES™

Designing a Medium Temperature Rack with Dual-Temp EEPR Controllers

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1. Introduction

This document proposes a practical way of setting up a medium temperature rack using EEPR (Electric Evaporator Pressure Regulator) valves controlled by the Micro Thermo DT-EEPR boards **950-636C**.

An example is given below, along with some guidelines.

Many variations are possible, within the specifications given in *44-PHW-1001 Dual-Temp EEPR Site Engineering*.

The present document discusses **network connections**, often referred to as "bindings". Although the OEM normally doesn't establish these network connections by himself, he needs to know how they will eventually be done in Alliance. Bindings influence the wiring.

2. Description of the Rack

We assume, in this example, that the medium temperature rack:

– uses hot gas defrost for 20 circuits,

– does off time defrost for 4 additional circuits

This design requires 4 DT-EEPR boards and 4 MT-CKT boards.

Unless noted otherwise, it is assumed that Sporlan EEPR valves are used. Alco valves are supported, but require larger power transformers for the DT-EEPR boards.

2.1 Associating DT-EEPR Valves with Circuits

The DT-EEPR board controls 6 valves, whereas the MT-CKT (Circuit Controller) is limited to 5 circuits (10 relays). In this design, each circuit is associated with a valve bearing the same number: Circuit 1 with Valve 1, Circuit 2 with Valve 2, etc. Respecting this rule makes it easier to maintain the site.

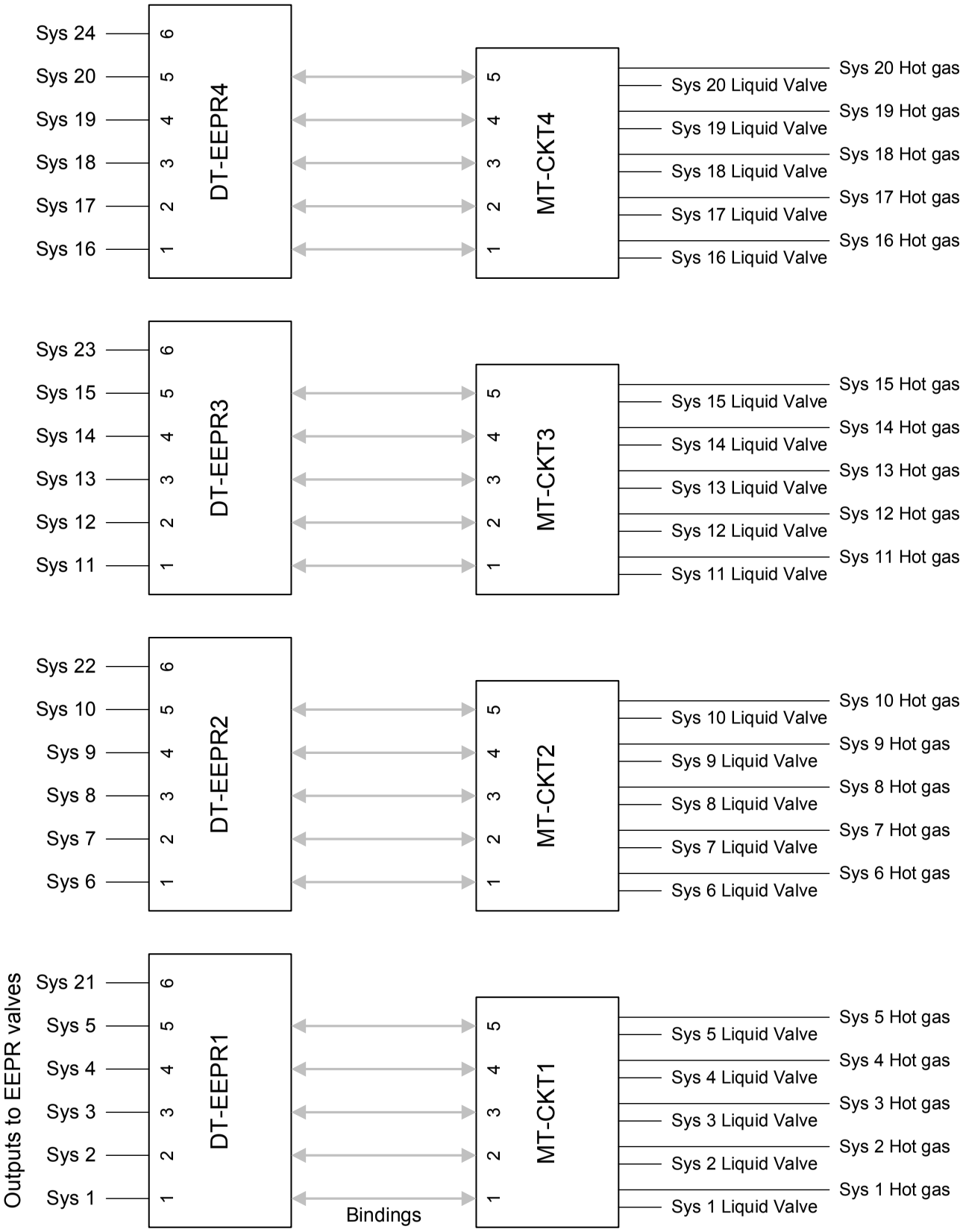
The 6th drive of each DT-EEPR is reserved for circuits doing off time defrost. Off-time defrosts are done by simply closing the EEPR valve, using an independent schedule that resides within the DT-EEPR node itself (internal defrost.)

Electric defrost may be implemented instead of hot gas. In that case, the second Circuit relay drives the heating elements instead of opening the hot gas solenoid valve.

Liquid solenoid valves are shown in the drawing, but they may be omitted in particular designs.

The electrical design illustrated on the next page supports the control strategy. The grey arrows represent some of the network connections (bindings) to be established in Alliance by the DT-EEPR plug-in.

ASSOCIATING DT-EEPR VALVE OUTPUTS WITH CIRCUITS



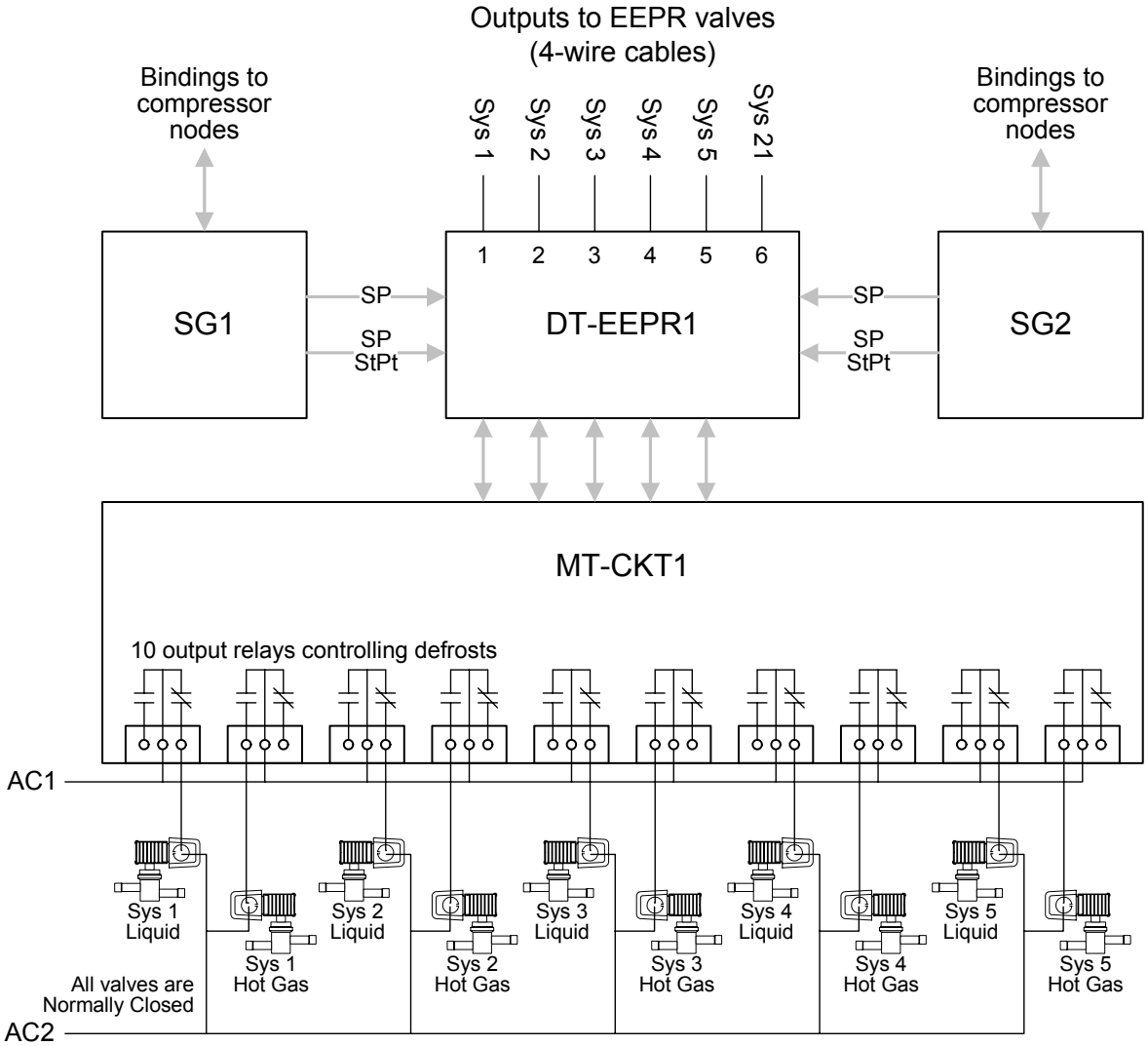
2.2 Details of a DT-EEPR and MT-CKT Pair

The figure below shows the first pair, consisting of DT-EEPR1 and MT-CKT1. The other 3 pairs are similar.

It is possible to have several suction groups. The limitation is that any given DT-EEPR controller supports only 2 suction groups.

The EEPR valves for circuits using hot gas defrost will usually be installed at the rack, where hot gas is available. For circuits using off time or electric defrost, the valves may be at the rack, near the case, inside a walk-in, or anywhere in between. The DT-EEPR nodes can be installed where it is convenient. Valves can be driven at a distance of several hundred feet.

DETAILS OF WIRING FOR DT-EEPR1 AND MT-CKT1



In the figure of the preceding page, it is assumed that some of the circuits served by node DT-EEPR1 are on Suction Group SG1 and others on SG2.

DT-EEPR1 receives the Suction Pressure (SP) and its set point (SPStPt) from both suction groups involved. Network connections (bindings) to be established in Alliance are represented as grey arrows.

2.3 Defrost Schedules

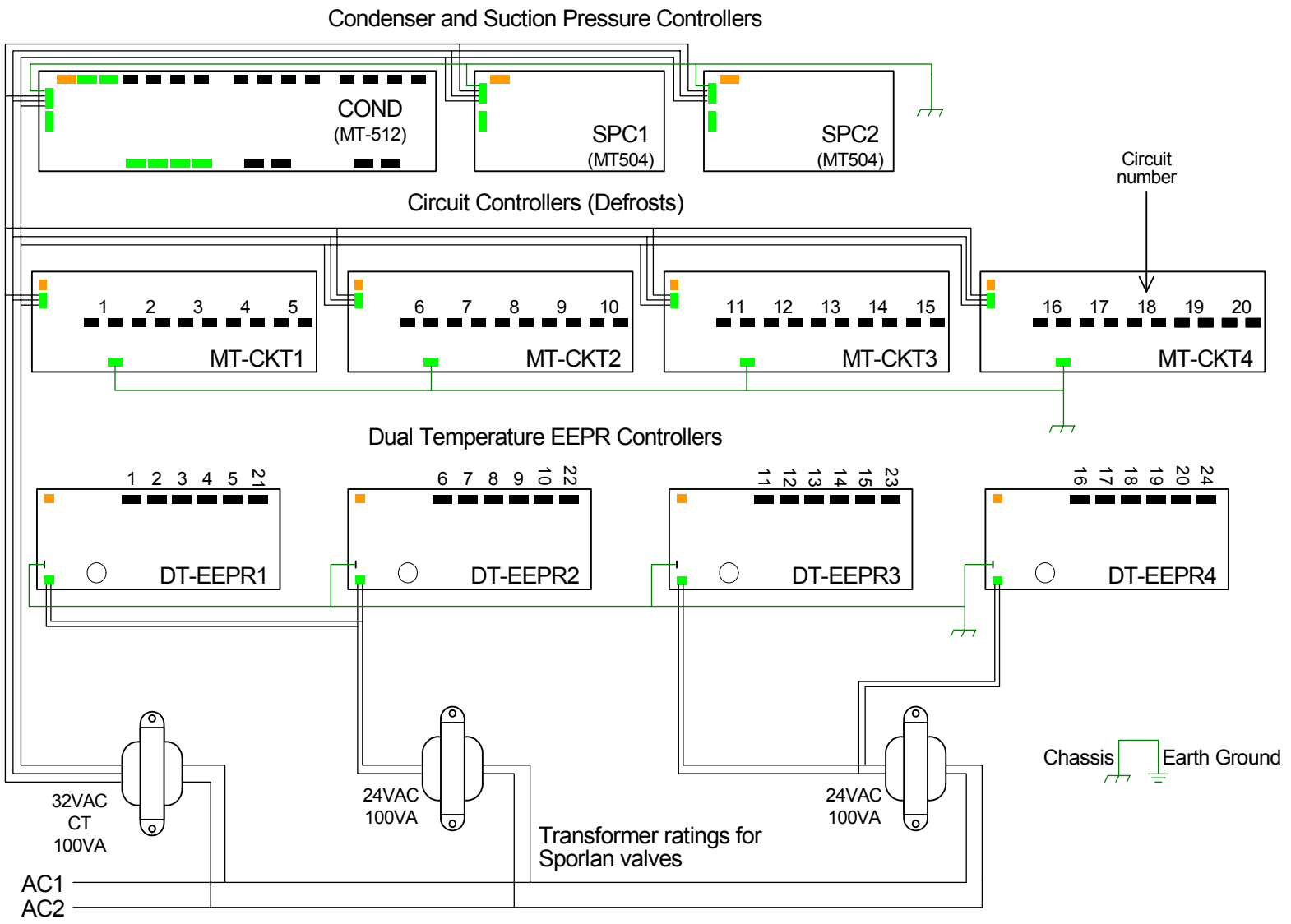
As of Alliance v 5.1, Off Time defrosts done by simply closing the DT-EEPR valve can be defined in the DT-EEPR plug-in, but these internal schedules are not yet integrated into the rack's scheduler.

If you wish to integrate these Off Time schedules within the rack scheduler, you can use a Control Module loaded with the MT-CKT firmware, since the 10 relays are not needed. The Control Module is smaller and less expensive than the MT-CKT. In the example given herein, all 20 circuits are in use for hot gas defrost. In your particular design, any spare circuit that you might have can also be used to define a schedule.

3. Cabinet Wiring

The figure on the next page shows the cabinet wiring that is required to power the controllers.

Each DT-EEPR controller requires 2.1 amperes when driving Sporlan valves. A controller driving Alco valves needs 3.4 amperes. Details of voltage, power requirements and wiring specifications are provided in *Dual-Temp EEPR Site Engineering* (PUID 44-PHW-1001).



TYPICAL CABINET FOR MEDIUM TEMPERATURE RACK

Revisions History

REV	Description	Revised by	Date
0.1	Document Creation	CB	02-Mar-07
1.0	Approved by Engineering	AH	12-Mar-07
1.1	Corrected	CB	17-Apr-07
1.2	Footer correction	RL	19-Apr-07
1.3	Cover page	ER	26-Feb-2015