

# REFRIGERATION PACKAGE RU-0001A

## EFFECT

## CAUSE

NOTES	CUSTOMER P&ID No. EB27-HSE-YD-PR-PID-002 (SHEET No.)	INSTRUMENT	DESCRIPTION	CLASSIFICATION	CONDITION OF ACTIVATION	PLACE OF GENERATION SOURCE	TAG No.	EQUIPMENT TAG No.	DESCRIPTION	ACTION	CUSTOMER P&ID No. EB27-HSE-YD-PR-PID-002 (SHEET No.)	Rev.
9	7	HSS-RU0001A-01	Emergency stop (local panel RU0001A-LCP-01)	Unit trip	1	LCP	HSHH-RU0001A-01	RU0001A-H01	Compressor shutdown trip	Immediate stop of compressor	7	
9	7	ESD-RU0001A-01	ESD emergency shutdown	Unit trip	1	UCP	ESDHH-RU0001A-01	RU0001A-P-01	Oil pump RU0001A-P-01 shutdown trip	Immediate stop of oil pump	7	
			ESD emergency shutdown CLIENT	Unit trip	1	UCP	ESDHH-RU0001A-02					
	2	PIT-RU0001A-01	Compressor Suction pressure low low	Unit trip	1.3	UCP	PISAL-RU0001A-01			Sequential stop of compressor	7	5
	2	PIT-RU0001A-01	Compressor Suction pressure high high	Unit trip	1.3	UCP	PISAH-RU0001A-01			Sequential stop of oil pump	7	
	3	PIT-RU0001A-03	Compressor Discharge pressure high high	Unit trip	1	UCP	PISAH-RU0001A-03			Initiating to standby position	6	
	2	POH-RU0001A-01	Compressor Oil supply header diff. press. low low	Unit trip	1,3,4	UCP	POISAL-RU0001A-01			Initiating to standby position		
	2	TIT-RU0001A-02	Oil header temperature High High	Unit trip	1	UCP	TISAH-RU0001A-02			Initiating to standby position		
	4	POH-RU0001A-03	Oil Filter differential pressure high high	Unit trip	1	UCP	POISAH-RU0001A-03			Initiating to standby position		
10	3	TIT-RU0001A-03	Compressor Discharge temperature high high	Unit trip	1	UCP	TISAH-RU0001A-03					
	2	XL-RU0001A-01	Compressor motor operation failure	Unit trip	1.7	MCC	XLH-RU0001A-01					
3.6	2	IR-RU0001A-01	Compressor motor high High Amperage	Unit trip	1	MCC	IRH-RU0001A-01					
1.3,9	2	XF-RU0001A-01	Compressor motor fault	Unit trip	10	MCC	XFH-RU0001A-01					
3.6	2	PTC-RU0001A-13	Compressor main motor winding V temp. high high	Unit trip	1	MCC	TSAH-RU0001A-13					
3.6	2	PTC-RU0001A-14	Compressor main motor winding V temp. high high	Unit trip	1	MCC	TSAH-RU0001A-14					
3.6	2	PTC-RU0001A-15	Compressor main motor winding V temp. high high	Unit trip	1	MCC	TSAH-RU0001A-15					
	6	LIT-RU0001A-01	Chiller Liquid level high high	Unit trip	1	UCP	LISAH-RU0001A-01					
	6	LIT-RU0001A-01	Chiller Liquid level low low	Unit trip	1.2	UCP	LISAL-RU0001A-01					
	2	PIT-RU0001A-01	Compressor Suction pressure high	Unit Alarm	1.6	UCP	PISAH-RU0001A-01					
	2	PIT-RU0001A-01	Compressor Suction pressure low	Unit Alarm	1.6	UCP	PISAL-RU0001A-01					
	3	PIT-RU0001A-03	Discharge pressure high	Unit Alarm	1	UCP	PISAH-RU0001A-03					
	3	PIT-RU0001A-03	Discharge pressure low	Unit Alarm	1	UCP	PISAL-RU0001A-03					
	2	POH-RU0001A-01	Compressor Oil supply header diff. press. low	Unit Alarm	1.4	UCP	POISAL-RU0001A-01					
	2	POH-RU0001A-01	Compressor Oil supply header diff. press. High	Unit Alarm	1.4	UCP	POISAH-RU0001A-01					
	3	POH-RU0001A-02	Oil separator section differential pressure high	Unit Alarm	1	UCP	POISAH-RU0001A-02					
	4	POH-RU0001A-03	Oil Filter differential pressure high	Unit Alarm	1	UCP	POISAH-RU0001A-03					
	3	TIT-RU0001A-03	Compressor Discharge temperature high	Unit Alarm	1	UCP	TISAH-RU0001A-03					
	2	TIT-RU0001A-02	Oil supply temperature high	Unit Alarm	1	UCP	TISAH-RU0001A-02					
	2	TIT-RU0001A-02	Oil supply temperature low	Unit Alarm	1	UCP	TISAL-RU0001A-02					
	3	LS-RU0001A-01	Oil separator level low	Unit Alarm	1	UCP	LISAL-RU0001A-01					
	4	XL-RU0001A-03	Oil pump RU0001A-P-01 motor operation failure	Unit Alarm	1.7	MCC	XLH-RU0001A-03					
	4	XF-RU0001A-03	Oil pump RU0001A-P-01 motor fault	Unit Alarm	1.7	MCC	XFH-RU0001A-03					
	3	XL-RU0001A-02	Separator oil heater operation failure	Unit Alarm	1.7	MCC	XLH-RU0001A-02					
2,3,9	3	XF-RU0001A-02	Separator oil heater fault	Unit Alarm	10	MCC	XFH-RU0001A-02					
	6	LIT-RU0001A-01	Chiller liquid level high	Unit Alarm	1	UCP	LISAH-RU0001A-01					
	6	LIT-RU0001A-01	Chiller liquid level low	Unit Alarm	1	UCP	LISAL-RU0001A-01					
4,9	3	TS-RU0001A-01B	Separator oil heater over temp. limit switch	Interlock	1	UCP & FIELD	TSHH-RU0001A-01B					
	2	IR-RU0001A-01	Compressor High motor current hold limit	Interlock	1	MCC	IR-RU0001A-01					
	2	IR-RU0001A-01	Compressor High motor current unload limit	Interlock	1	MCC	IR-RU0001A-01					
	3	PI-RU0001A-03	High discharge pressure hold limit	Interlock	1	UCP	PI-RU0001A-03					
	3	PI-RU0001A-03	High discharge pressure unload limit	Interlock	1	UCP	PI-RU0001A-03					
	2	PI-RU0001A-01	Low suction pressure hold limit	Interlock	1	UCP	PI-RU0001A-01					
	2	PI-RU0001A-01	Low suction pressure unload limit	Interlock	1	UCP	PI-RU0001A-01					
	5	VS-RU0001A-01A	Condenser motor RU0001A-M-02 vibration high high	Interlock	1	UCP	VSHH-RU0001A-01A					
	5	VS-RU0001A-01B	Condenser motor RU0001A-M-03 vibration high high	Interlock	1	UCP	VSHH-RU0001A-01B					
	5	XL-RU0001A-04A	Condenser motor RU0001A-M-02 motor operation failure	Unit Alarm	1.7	MCC	XLH-RU0001A-04A					
	5	XF-RU0001A-04A	Condenser motor RU0001A-M-02 motor fault	Unit Alarm	10	MCC	XFH-RU0001A-04A					
	5	XL-RU0001A-04B	Condenser motor RU0001A-M-03 motor operation failure	Unit Alarm	1.7	MCC	XLH-RU0001A-04B					
	5	XF-RU0001A-04B	Condenser motor RU0001A-M-03 motor fault	Unit Alarm	10	MCC	XFH-RU0001A-04B					

**NOTES:**

- Include any electrical faults detected by MCC. (e.g. over load, over current, low/high voltage, ground fault, open phase, reverse phase, etc.)
- Include any electrical faults detected by MCC, and "Separator oil heater over temp. limit switch", status and "Separator oil heater box cut-out switch" status.
- Activate by "fault signal" from MCC. Safety interlock to be created by MCC.
- Activate "fault signal" to PLC. Alarm indication to be created commonly by "fault signal".
- Local reset switch in the heater terminal box.
- Cable directly connected to MCC from local equipment.
- Caused by unit stop status and compressor stop status.
- UCP: Unit control panel (PLC panel) / LCP: Local control panel / MCC: Motor control centre / CCR: Central control room.
- Source of trip must be cleared by reset , before possible reset on the HMI (UCP).
- Only one compressor is able to operate at the same time. In case of indicated trip, stand-by compressor can be started
- Main motor start permissive 3/2 cold/hot start-ups
- This diagram is prepared for RU-0001A and is typical for RU-0001B with changing suffix of all tag numbers from "A" to "B". e.g. PG-RU0001B-01

**Condition of activation:**

- Activate after delay timer has expired (if delay timer is applicable).
- Activate when unit status is "in operation". ("In operation" = status from compressor started by start order until stop order has been received).
- Activate when compressor motor running confirmation is activated.
- Activate when oil pump motor running confirmation is activated.
- Activate after 60 second from when unit status is "in operation".
- Activate after 60 second from when compressor motor running confirmation is activated.
- Activated by No running confirmation from MCC after start signal delivered, or Remaining running confirmation from MCC after stop signal delivered.
- Activated by No running confirmation of oil pumps when compressor running.
- Activated by both oil pump has motor fault and/or operation failure.
- Activated by fault status signal from MCC.
- Signal from Control room