QUICK START GUIDE

PARAMETER LIST

FrigoPack FEP-12/ FrigoSoft 2.5

REFR/COOL Refrigeration HVAC
FS 2.5.2-1x

Automatic to OPERATOR menu approx. 2 s after switching on

		Type / Value	Description	Further information
# XX.XkW 400 V 5.7	OPERATOR menu at level 1			
Measured values				
- Refrigeration	01:Po SUCT PRESS = Y.Y bar	Measured value	Po, Suction pressure: -0.5 ... 7.0 bar	9.1.1
	02:Po SUC PR DEV = YY.YY %	Deviation	Po, Suction pressure: -100.00 ... 100.00 %	
	03:Pc DISC PRESS = YY.Y bar	Measured value	Pc, Discharge / condens. pressure: 0.0 ... 25.0 bar	
	04:FsC NUMB ACTV = Y.YY	Measured value	Fixed-speed Compressors: Number active (in operation)	
- Variable-speed Fans (VsF), Condenser:	05:VsF CD ACT VL = YY.YY	Actuating value	Variable speed Fan, cond.: 0.00 ... 100.00 (%)	9.1.2
- Variable-speed Compressor (VsC):	06:VsC MOT FREQ = YYY.YY Hz	Measured value	Variable-speed Compressor: Motor Frequency	9.1.3
	07:VsC MOT CURRT = YYY.Y A	Measured value	Variable-speed Compressor: Motor current	
Settings				
Refrigeration				
- Suction pressure:	08:Po SETPOINT 1 → 3.3 bar	Set value 1 _._ bar	Po, Setpoint 1: -0.5 ... 7.0 bar	8.3.2/3
	09:Po SETPOINT 2 → 3.8 bar	Set value 2 _._ bar	Po, Setpoint 2: -0.5 ... 7.0 bar	
	10:Po MINIMUM → 2.5 bar	Set value _._ bar	Po, Stop value "Pump Down limit": -0.5 ... 7.0 bar	
- Discharge / condensing pressure:	11:Pc SETPOINT 1 → 17.3 bar	Set value __._ bar	Pc, Setpoint 1: 0.0 ... 25.0 bar	8.3.4
	12:Pc SETPOINT 2 → 20.1 bar	Set value __._ bar	Pc, Setpoint 2: 0.0 ... 25.0 bar	
	13:Pc MAXIMUM → 22.6 bar	Set value __._ bar	Pc, High limit: 0.0 ... 25.0 bar	8.3.5
Variable-speed Compressor (VsC)	14:VsC FREQ MAX → 60.0 Hz	Set value __._ Hz	VsC, Maximum frequency: 15.0 ... 90.0 Hz	8.4.1
- Frequency range:	15:VsC FREQ MIN → 25.0 Hz	Set value __._ Hz	VsC, Minimum frequency: 15.0 ... 90.0 Hz	
- Magnetising:	16:VsC FREQ BASE → 55.0 Hz	Set value __._ Hz	VsC, Base frequency: 50.0 ... 90.0 Hz	8.4.2
	17:VsC BOOST → F.F0 %	Set value __._ %	VsC, Boost: 0.00 ... 10.00 %	
- Resonance avoidance:	18:VsC SKIP FREQ → 0.0 Hz	Set value __._ Hz	VsC, Skip frequency: 0.0 ... 90.0 Hz	8.4.3
	19:VsC SKIP BAND → 0.0 Hz	Set value __._ Hz	VsC,: Skip frequency band: 0.0 ... 10.0 Hz	
- Time settings:	20:VsC tinh TIME → FFF.0 s	Set value ___._ s	VsC, Minimum OFF time: 0.1 ... 3000.0 s	8.5.1
	21:VsC toil TIME → 4.0 s	Set value ___._ s	VsC, Oil lubrication pulse time: 0.1 ... 3000.0 s	
	22:VsC thld TIME → 10.0 s	Set value ___._ s	VsC, Hold time: 0.1 ... 3000.0 s	
Fixed-speed Compressor (FsC)	23:FsC ton DLY → FFF.0 s	Set value ___._ s	FsC, Switch-on delay: 0.1 ... 3000.0 s	8.5.2
- Time settings	24:FsC toff DLY → FF.F s	Set value ___._ s	FsC, Switch-off delay: 0.1 ... 3000.0 s	
Controllers	25:Po CNTRL P-GN → F.00	Set value __._	Po controller, Proportional gain: 0.00 ... 100.00	8.6.1
- Po Controller:				
- Pc Controller:	26:Pc CNTRL P-GN → 8.00	Set value __._	Pc controller, Proportional gain: 0.00 ... 100.00	8.6.2
- VsF Minimum speed:	27:VsF CD MIN SD → 15.00	Set value __._	Var.-speed Fan, cond., min. speed: 0.00 ... 100.00	
- Pc/HP Pressure limiting:	28:Pc LIMIT P-GN → 25.00	Set value __._	Pc limiter, Proportional gain: 0.00 ... 100.00	
- Settings for external controller:	29:Po ACT VAL=0% → 6.5 bar	Set value _._ bar	Po at actuating value = 0 %: -0.5 ... 7.0 bar	8.7
Other settings	30:AOUT1 FUNCTN → INPUT 0	Set value _____	AOUT1 - Function selection: INPUT 0...2	8.8.1
	31:AOUT3 FUNCTN → INPUT 0	Set value _____	AOUT3 - Function selection: INPUT 0...2	8.8.2
	32:CONTRL FUNCTN → INPUT 0	Set value _____	FrigoSoft - Function selection: INPUT 0...7	8.8.3
	SETPOINT(REMOTE)/ SETPOINT(LOCAL) = YYY.YY %	Measured value	Activating value of speed	9.2

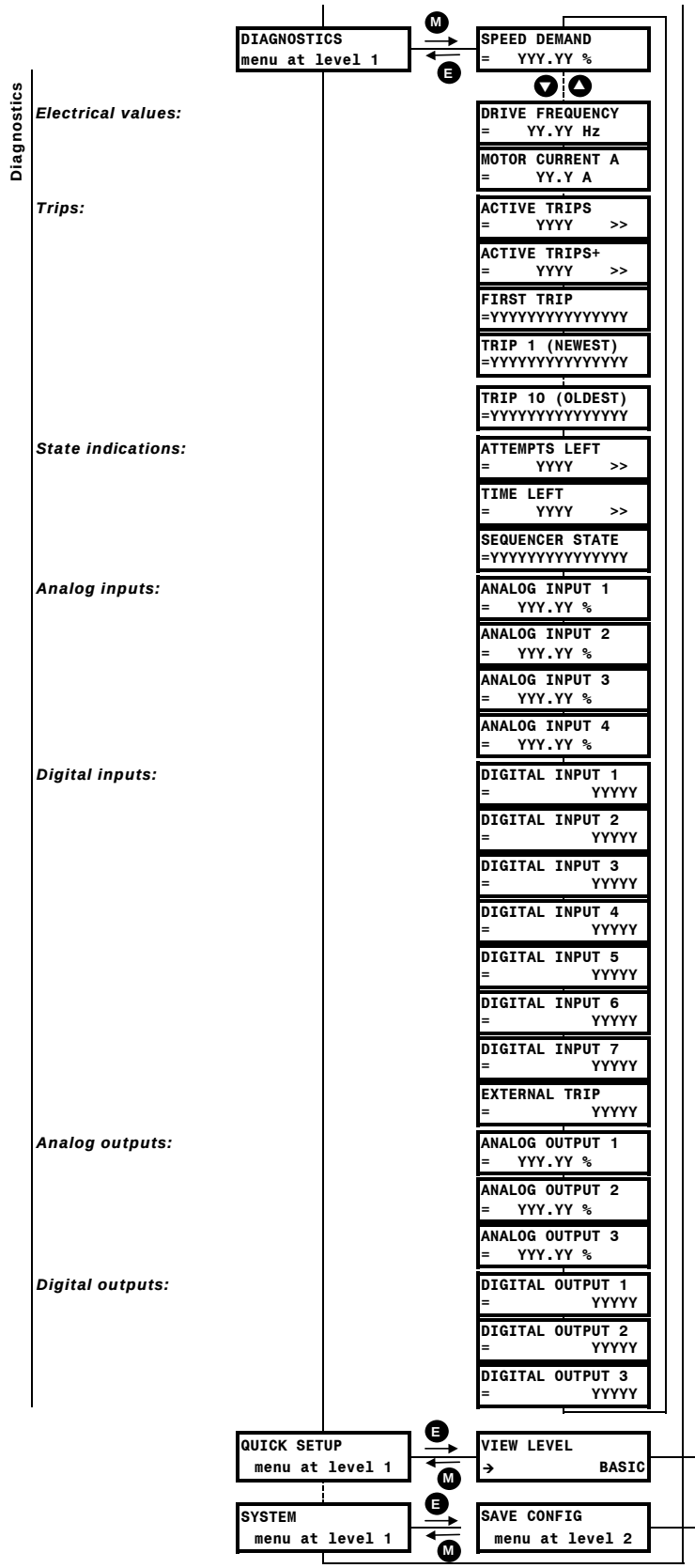
-10 °C* -7 °C* -16 °C* 40 °C* 46 °C* 51 °C* 9 °C*

* Factory settings for R404A
F Depends on frame size
Please refer to supplier or KIMO RHVAC

Key for abbreviations

VsC:	Variable-speed Compressor (Inverter operation)
FsC:	Fixed-speed Compressor
VsF:	Variable-speed fans (Condenser / Dry cooler)

= YYY.YY % : Measured value depending on operating point
→ FFF.0 s : Factory default value depending on frame size and rated power



Measured value	VsC: Actuating value of Freq.: % of maximum frequency	
Measured value	Variable-speed Compressor: Motor Frequency	
Measured value	Variable-speed Compressor: Motor current	
Trip	Active trips: First set	10.2-4
Trip	Active trips: Second set	
Trip	Trip which caused shut down	
Trip	Trip 1 (newest) which caused shut down	
Trip	Trip 10 (oldest) which caused shut down	
Trip	Autorestart logic: Attempts left	10.2-4
Trip	Autorestart logic: Time to next start attempt	
Trip	Operating status: Sequencer control state	
AIN1 (X2:2) Analog input 1	Po, Suction-pressure transducer: 4 ... 20 mA; 0 ... 100 %	6.6, 7.7.4
AIN2 (X2:3) Analog input 2	Pc, High-pressure transducer: 4 ... 20 mA; 0 ... 100 %	
AIN3 (X2:4) Analog input 3	Th, Exhaust temperature: PT1000	6.6, 7.7.5
AIN4 (X2:5) Analog input 4	Ext. act. value / setpoint: 0 ... 10 V: 0.0 ...100.0 %	6.6, 5.2.3/4
DIN1 (X2:12) Digital input 1	Enable (Start)	5.2.1-4
DIN2 (X2:13) Digital input 2	Force lubrication speed	5.3
DIN3 (X2:14) Digital input 3	Activate Setpoint / Limit Po2	5.2.2/4
DIN4 (X2:15) Digital input 4	NOT activate Setpoint / Limit Po1	5.2.2/4
DIN5 (X2:16) Digital input 5	Activate Setpoint Pc2	5.3
DIN6 (X2:17) Digital input 6	Activate VsC continuous operation	5.3
DIN7 (X2:18) Digital input 7	Activate emergency operation	5.3
DIN8 (X2:19) Digital input 8	Safety circuit "Ready" (No fault)	5.4
AOUT1 (X2:6) Analog output 1	VsF condenser / Warning / VsC speed	7.7.3
AOUT2 (X2:7) Analog output 2	Activate FsC1 (Fixed-speed Compressor 1)	6.5
AOUT3 (X2:8) Analog output 3	Activate FsC3 (Fixed-speed Compressor 3)	
DOUT1 (X:21-22) Digital output 1	Ready (Health)	7.7.3
DOUT2 (X2:23-24) Digital output 2	Operating	6.3
DOUT3 (X2:25-26) Digital output 3	Activate FsC2 (Fixed-speed Compressor 2)	6.5
For special use	Only enter this menu after consulting KIMO	
For special use	Only enter this menu after consulting KIMO	

Other preferred refrigeration settings:

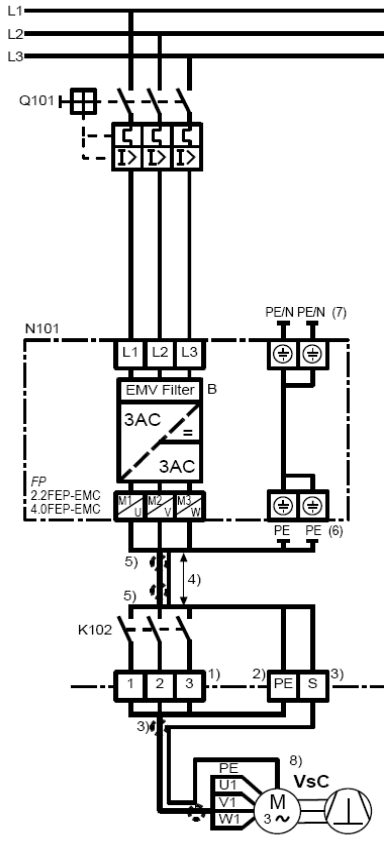
Based on EN 12900

	R404A/R507A			R407C		R22			R134a		
	LT	MT	HT	MT	HT	LT	MT	HT	MT	HT	
to1	-35	-10	+ 5	-10	+ 5	-32	-10	+ 5	-10	+ 5	[°C]
to2	-30	- 7	+ 8	- 7	+ 8	-30	- 7	+ 8	- 7	+10	[°C]
tol	-40	-16	0	-16	0	-37	-16	0	-16	0	[°C]
toh	+ 7	+ 7	+ 7	+12	+12	+12	+12	+12	+12	+12	[°C]
tc1	+40...48	+40...48	+40...48	+40...48	+40...48	+40...48	+40...48	+40...48	+40...50	+40...50	[°C]
tc2	+46...48	+46...48	+46...48	+46...48	+46...48	+46...48	+46...48	+46...48	+46...52	+46...52	[°C]
tch	+51	+51	+51	+52	+52	+52	+52	+52	+55	+55	[°C]
08:Po SETPOINT 1 → 3.3 bar	0.6	3.3	6.0	2.2	4.5	0.5	2.5	4.8	1.0	2.5	[bar]
09:Po SETPOINT 2 → 3.8 bar	1.0	3.8	6.7	2.6	5.0	0.6	2.9	5.4	1.3	3.1	[bar]
10:Po MINIMUM → 2.5 bar	0.3	2.5	5.0	1.5	3.6	0.2	1.9	4.0	0.6	1.9	[bar]
11:Pc SETPOINT 1 → 17.3 bar	17.3	17.3	17.3	16.5	16.5	14.3	14.3	14.3	9.2	9.2	[bar]
12:Pc SETPOINT 2 → 20.1 bar	20.1	20.1	20.1	19.2	19.2	16.7	16.7	16.7	10.9	10.9	[bar]
13:Pc MAXIMUM → 22.6 bar	22.6	22.6	22.6	22.2	22.2	19.3	19.3	19.3	13.9	13.9	[bar]
29:Po ACT VAL=0% → 7.0 bar	6.5	6.5	6.5	5.8	5.8	6.2	6.2	6.2	3.9	3.9	[bar]

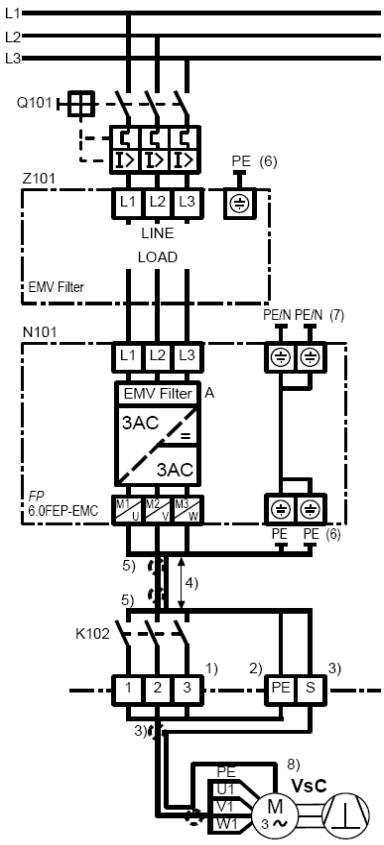
Factory settings for R404A

POWER SECTION

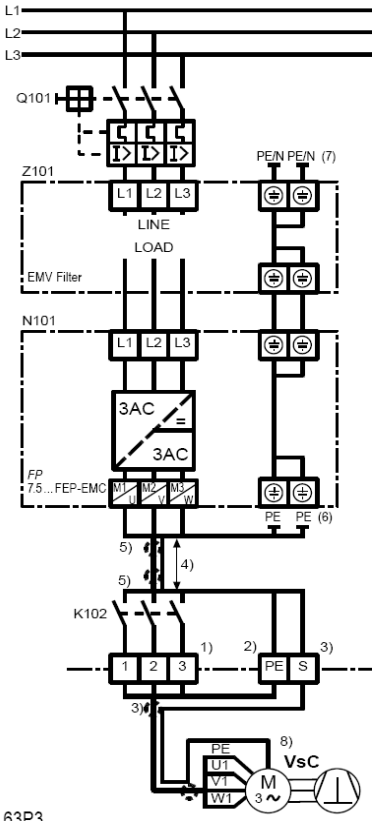
Power connections



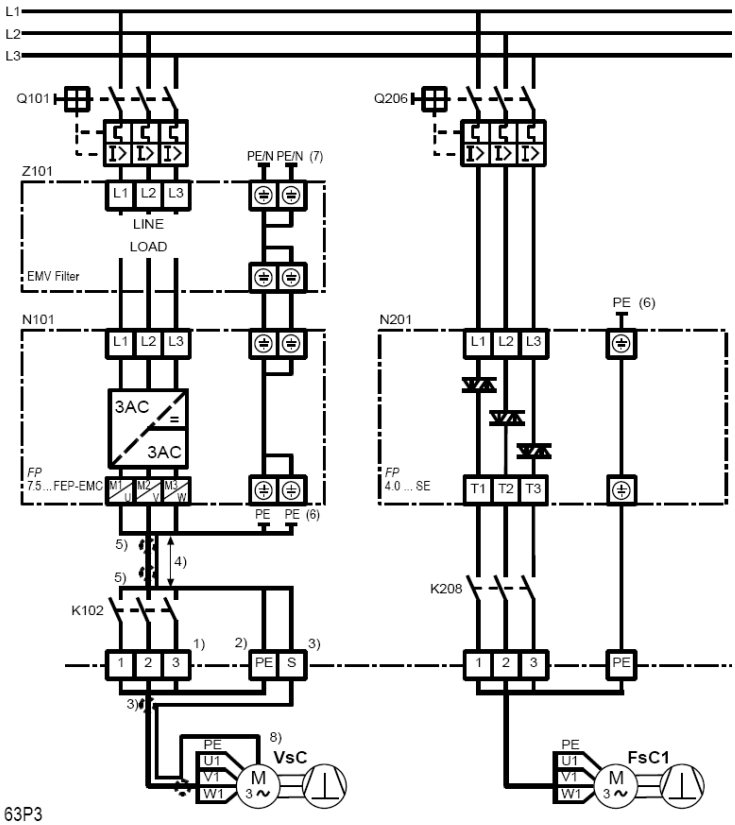
FrigoPack 2.2/4.0FEP:
Power wiring



FrigoPack 6.0FEP:
Power wiring



FrigoPack 7.5 ... 90FEP:
Power wiring



FrigoPack 7.5 ... 90FEP:
Power wiring with two compressors

Power terminals

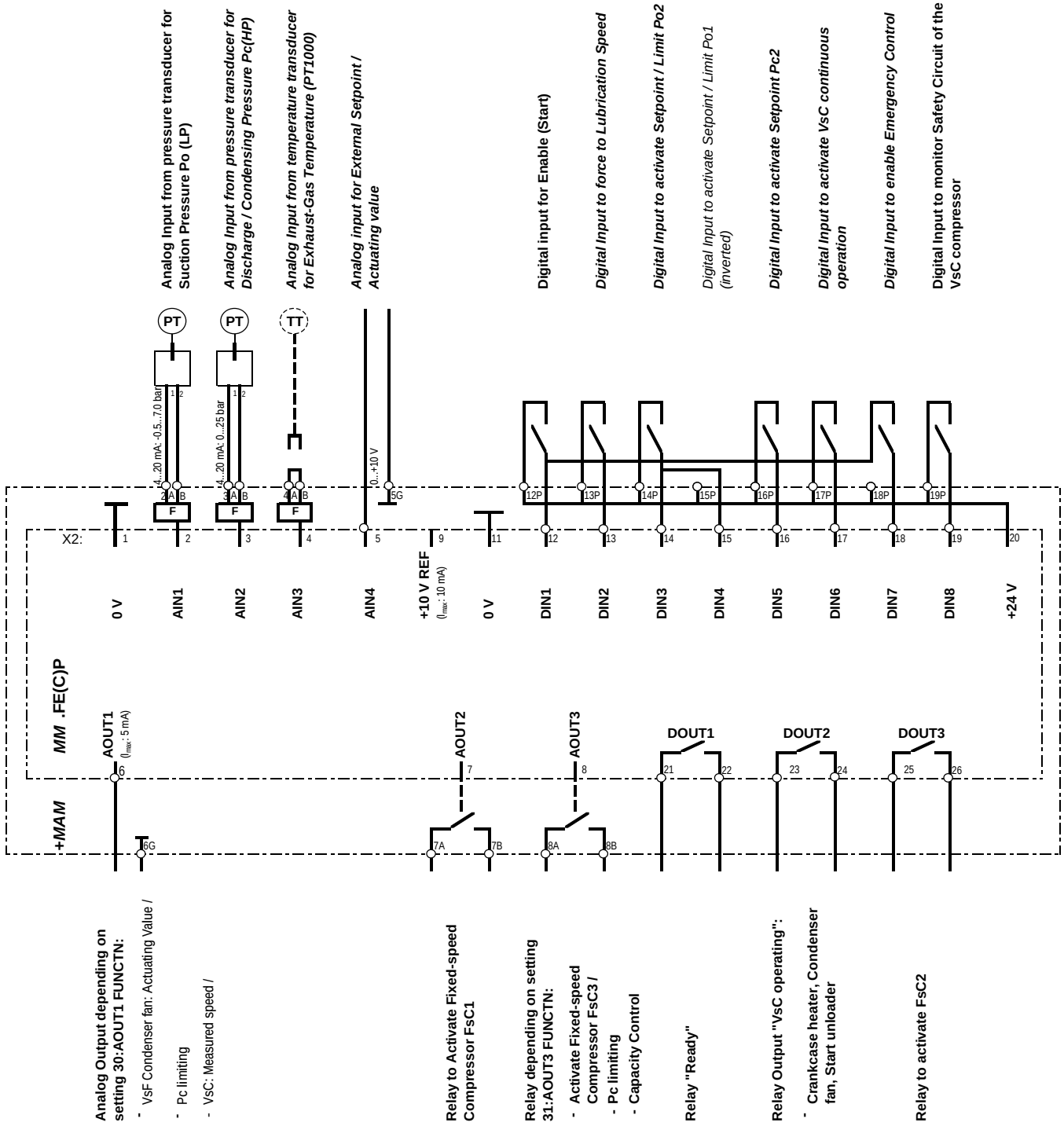
Terminal / Designation	Signal / Function	Explanation	Further information
PE, PE	**FP ...30FEP-EMC: Protective earth connections Protective earth connection**	- Observe all safety and EMC requirements	**7.7.1**
PE	**FP 37... FEP-EMC: (both to be earthed)**		
L1	**Three phases of voltage supply**	- Ensure that supply voltage agrees with data on MotorMaster name plate	**7.7.1**
L2/N			
L3			
DC+		- Do not use otherwise risk of damage to FrigoPack	
(DBR)			
DC-			
M1/U	**Compressor motor**	- Variable-speed Compressor via safety contactor	**7.7.1/ 7.7.2**
M2/V			
M3/W			
PE	**Protective earth connection to compressor motor**		**7.7.2**
(DBR+)		- Do not use otherwise risk of damage to FrigoPack	
(DBR-)			
AUX1	**Only with: FP 55...FEP-EMC 2AC 230 supply for equipment fan**	- Supply externally	**6.7 6.8.4**
AUX2			

Terminals for motor protection

Terminal / Designation	Signal / Function	Explanation	Further information
X2:			
MOT/ TEMP	**Alternative a), Without processing:**	- Thermistor protection is processed in safety circuit, these two terminals must be linked	**6.2**
	Alternative b), Direct processing of motor thermistors:	- Direct processing of motor thermistors:	
	Alternative c), Processing an external thermistor relay:	- Processing an external thermistor relay:	
	Alternative d), Processing an external thermistor relay:	- Connect the "Normally open" contacts of an auxiliary relay wired to an external thermistor relay (e.g. KRIWAN) between these two terminals.	

CONTROL SECTION

Control connections



VsC: Variable-speed Compressor (Inverter operation) **FsC: Fixed-speed Compressor**

FrigoPack FEP-12/ FrigoSoft 2.5

Terminals for control functions

Special settings

30:AOUT1 FUNCTN

Setting		AOUT1:
-	**INPUT 0**	**VsF: Actuating Value**
-	INPUT 1	Pc limiting
-	INPUT 2	VsC: Measured speed

31:AOUT3 FUNCTN

Setting		AOUT3:
-	**INPUT 0**	**Activate FsC3**
-	INPUT 1	Pc limiting
-	INPUT 2	VsC Capacity Control

32:CONTRL FUNCTN

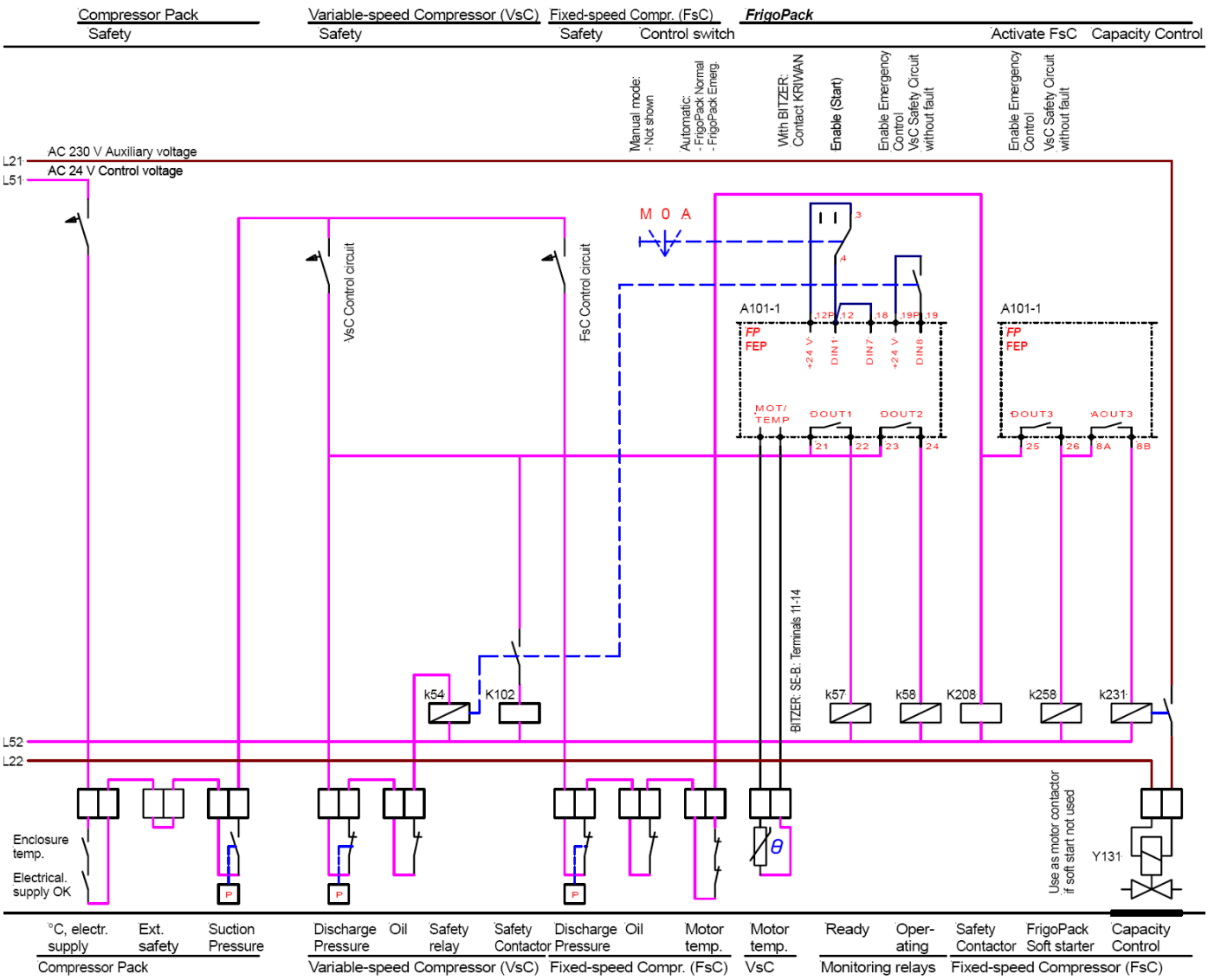
Setting		Function	
-	**INPUT 0**	**Suction pressure setpoints 1/2**	
-	INPUT 1	Ext. Actuating Value of suction pressure	
-	INPUT 2	+5.0 bar	(For test purposes)
-	INPUT 3	+4.0 bar	(For test purposes)
-	INPUT 4	+3.0 bar	(For test purposes)
-	INPUT 5	+2.0 bar	(For test purposes)
-	INPUT 6	+1.0 bar	(For test purposes)
-	INPUT 7	+0.0 bar	(For test purposes)

Terminals for control functions

Terminal / Designation		Signal / Function	Explanation	Further information
2A - 2B	AIN1	**Analog Input from pressure transducer for Suction Pressure Po (LP):** **0 mA: Fault** **4 mA: -0.5 bar** **20 mA: +7.0 bar**	- Suction pressure Po (LP), must be used - Suitable pressure transducer: - A REF-P-TRANSD-LP7+PL - Connections: - 1 --> 2A; 2 --> 2B	**7.7.4**
3A - 3B	*AIN2*	***Analog Input from pressure transducer for Discharge / Condensing Pressure Pc(HP):*** ***0 mA: Not used*** ***4 mA: 0.0 bar*** ***20 mA: +25.0 bar***	*- Discharge / condens. pressure Pc (HP), optional use* *- Suitable pressure transducer:* *- A REF-P-TRANSD-HP25+PL* *- Connections:* *- 1 --> 3A; 2 --> 3B*	***7.7.4***
4A - 4B	*AIN3*	***Analog Input from temperature transducer for Exhaust-Gas Temperature (PT1000)***	*- Exhaust-gas Temperature* *- Optional use* *- Bridge when not used*	***5.3, 7.7.5***
5 - 5G	*AIN4*	***Analog input for External Setpoint / Actuating value:*** ***0 V: 0.0 %*** ***+10 V: 100.0 %***	*- External setpoint / actuating value required for operation with external controller* *- Use screened cable*	***5.2.3/4***
6 - 6G	AOUT1	**Analog Output (5 mA max. load):** 0 V: **0.00 % Actuating value** +10 V: **100.00 % Actuating value** **Digital Output with ext. special relay:** Open: **Not activated** Closed: **Activated**	- Analog Output depending on setting 30:AOUT1 - VsF Condenser fan: Actuating Value / - Pc limiting - VsC: Positive limit - Only use special relay A RELAY-DC12V (available as accessory)	**7.7.3**
7A - 7B	AOUT2	**Analog Output usually used with internal relay to activate FsC1:** Open: **Not activated** Closed: **Activated**	- Relay to Activate Fixed-speed Compressor FsC1 - Max contact load: AC 230 V, 250 VA	**7.7.3**
8A - 8B	AOUT3	**Analog Output usually used with internal relay to activate FsC3:** Open: **Not activated** Closed: **Activated**	- Relay depending on setting 31:AOUT3 FUNCTN: - Activate Fixed-speed Compressor FsC3 / - Pc limiting - Capacity Control - Max contact load: AC 230; 250 VA	**7.7.3**
12P - 12	DIN1	**Digital input for Enable (Start):** **0 V: Stop** **+24 V: Enable**	- Enable / Start	**5.2.1-4, 7.7.3**
13P - 13	*DIN2*	***Digital Input to force to Lubrication Speed:*** ***0 V: Normal*** ***+24 V: Lubrication speed***	*- Force Lubrication Speed* *- Optional use* *- Requires external timer*	***5.3, 7.7.3***
14P - 14	*DIN3*	***Digital Input to activate Setpoint / Limit Po2:*** ***0 V: No action*** ***+24 V: Activate Setpoint / Limit Value Po2***	*- Setpoint / Limit selection Po* *- Optional use* *- Connect to DIN4 for normal selection*	***5.2.2/4, 7.7.3***
15P - 15	*DIN4*	***Digital Input to activate Setpoint / Limit Po1 (inverted):*** ***0 V: Activate Setpoint / Limit Value Po1*** ***+24 V: No action***	*- Setpoint / Limit selection (inverted) Po* *- Optional use* *- Connect to DIN3 for normal selection*	***5.2.2/4, 7.7.3***
16P - 16	*DIN5*	***Digital Input to activate Setpoint Pc2:*** ***0 V: No action*** ***+24 V: Activate Setpoint / Limit Value Pc2***	*- Pc Setpoint selection* *- Optional use*	***5.3, 7.7.3***
17P - 17	*DIN6*	***Digital Input to activate VsC continuous operation:*** ***0 V: Normal*** ***+24 V: Activate Continuous Operation***	*- VsC continuous operation* *- Optional use* *- Prevents VsC from stopping provided that suction pressure is not less than Po MINIMUM*	***5.3, 7.7.3***
18P - 18	*DIN7*	***Digital Input to enable Emergency Control:*** ***0 V: No Emergency Control*** ***+24 V: Activate Emergency Control***	*- Emergency operation (Operation with a defect inverter or compressor)* *- Optional use*	***5.3, 7.7.3***
19P - 19	DIN8	**Digital Input to monitor Safety Circuit of the VsC compressor:** **0 V: External fault** **+24 V: Normal (no fault)**	- Safety circuit without fault - Must be used - Interrupt if there is a fault (Required to stop inverter operation)	***5.4, 7.7.3***
21 - 22	DOUT1	**Relay "Ready":** Open: **No supply, fault or alarm** Closed: **Ready (no fault)**	- Ready (no fault) - Max contact load: AC 230 V, 250 VA	**5.4, 7.7.3**
23 - 24	DOUT2	**Relay Output "VsC operating":** Open: **VsC: Inhibited / Not operating** Closed: **VsC: Starting / Operating**	- "Operating" to control auxiliaries such as: Crankcase heater, Condenser fan, Start unloader - Max contact load: AC 230 V, 250 VA	**5.4, 7.7.3**
25 - 26	DOUT3	**Relay to activate FsC2:** Open: **Not activated** Closed: **Activated**	- Activate Fixed-speed Compressor FsC2 - Max contact load: AC 230 V, 250 VA	**7.7.3**

VsC: **Variable-speed Compressor (Inverter operation)** VsF: **Variable-speed fan (condenser)**
FsC: **Fixed-speed Compressor**

Safety and control circuits



Important note:

This simplified overview of the safety and control wiring of a typical system only includes the wiring for AUTOMATIC operation.

KIMO RHVAC recommends that the following additional functions are included in the control system:
- MANUAL mode of operation using a "Pump Down" circuit
- A security circuit to provide:
- Automatic selection of MANUAL operation in an emergency
- Means of stopping the evaporators if compressors are not available.

Standard suggestions for the safety and control wiring with these features are available on request.

KIMO RHVAC can assist with the planning of complex systems or systems with special requirements.

TROUBLE SHOOTING LIST

PROBLEM	POSSIBLE CAUSE	Hints for fault finding	REMEDIES
*** TRIPPED *** OVERVOLTAGE	* Voltage of supply too high	- Measure and document the voltage in all three input phases	- Rectify cause of any high voltage
	* Safety contactor not controlled correctly	- Check wiring of control circuit and compare function with KIMO RHVAC recommendations	- Modify wiring
	* Compressor motor defect	- Test if compressor motor will run with DOL supply	- Replace compressor motor
		- Measure resistance of motor winding and compare with manufacturers's data - Check insulation beween phases and to earth	
*** TRIPPED *** UNDERVOLTAGE	* Voltage of supply too low	- Measure and document the voltage in all three input phases	- Rectify cause of any low voltage
*** TRIPPED *** OVERCURRENT	* Phase of supply voltage missing		
*** TRIPPED *** DESAT (OVER I)	* Safety contactor not controlled correctly	- Check wiring of control circuit and compare function with KIMO RHVAC recommendations	- Modify wiring
	* Compressor motor defect	- Test if compressor motor will run with DOL supply	- Replace compressor motor
		- Measure resistance of motor winding and compare with manufacturers's data - Check insulation beween phases and to earth	
	* Power section of FrigoPack faulty	- Remove motor cable connections to FrigoPack	- Replace FrigoPack
		- Check if operation of FrigoPack without a motor connected is possible (No trip message: Probably OK; Trip message: Probably defect) - Test for operation with a small test motor	
*** TRIPPED *** EXTERNAL TRIP	* Safety contactor not controlled correctly	- Check wiring of control circuit and compare function with KIMO RHVAC recommendations	- Modify wiring
	* Safety device in safety circuit tripped	- Check safety circuits	- Reset if necessary
	* DC 24 V control voltage missing	- Check DC 24 V control voltage at FrigoPack	- Modify wiring
		- Short circuit with DC 24 V control voltage	
*** TRIPPED *** INPUT 1 BREAK	* Suction-pressure transducer not connected or connections swapped	- Check if blue LED at the input of FrigoPack lights	- Verify correct connection to transducer for suction pressure. Exchange leads if necessary
	* Transducer for suction pressure faulty	- Measure current from transducer for suction pressure at input to FrigoPack (must be at least +4 mA)	- Replace transducer for suction pressure
*** TRIPPED *** INVERSE TIME	* Compressor start abortet	- Liquid refrigerant in compressor?	- Contact KIMO RHVAC for advice
		- Defect compressor - Unsuitable FrigoPack settings	
*** TRIPPED *** MOTOR OVERTEMP	* Link TH1A-TH1B or MOT/TEMP missing	- Check wiring of control circuit and compare function with KIMO RHVAC recommendations	- Modify wiring
	* No connection to motor protection PTC		
	* Faulty connection to external PTC relay		
	* Motor winding too hot	- Compressor overloaded	- Contact KIMO RHVAC for advice
*** TRIPPED *** ?ANYTHING ELSE?	* Anything else		- Contact KIMO RHVAC for advice

Important note:

These messages are of common trips likely to occur during commissioning.
Other trip messages can occur in fault conditions.

When requesting advice from KIMO RHVAC, always make an exact note of the following:
- Exact trip messagein both lines of display
- Message displayed when key 'E' is pressed for at least 10 s.

CHECKLIST AND ADDITIONAL DATA FOR PROBLEM REPORT

KIMO Problem Code		Part of installation	Checklist of questions for PROBLEM REPORT	Explanation	Terminals	Answer/ Confirmation
ES		Electrical: - Supply	• Are there any known power supply interruptions ?			Yes ☐ No ☐
			• Do these power supply interruptions occur at the same time each day ?			Yes ☐ No ☐
				- Indicate approx. times		When: _____
			• By what amount does the supply voltage vary ?	- Indicate min. and max. voltages		Min.: _____ [V] Max.: _____ [V]
EI		- Installation	• Motor cable: Approx. Length ?			_____
			• Motor cable: Type of screen ?	- Copper braid ?, Steel braid ?, - Steel conduit ?, none ?		Cu brd. ☐ Fe brd. ☐ Fe cond. ☐ None ☐
			• Motor cable: Screen connected to mounting plate?	- Recommendations: - Contact with large surface area		Yes ☐ No ☐
			• Motor cable: Screen connected to metal motor housing ?	- Make sure no "pig tails"		Yes ☐ No ☐
			• Is a galvanised mounting plate used in the electrical enclosure ?			Yes ☐ No ☐
			• Is a motor filter used between the MotorMaster and the compressor motor ?	- If yes, indicate KIMO product code		Yes ☐ No ☐ Pr. Cde: _____
MT		Compressor motor	• Have motor currents been entered into the PROBLEM REPORT ?	- Operating point - Start up		Yes ☐ No ☐ Yes ☐ No ☐
MM		*FrigoPack* :				
MM	CI	- Control and sensor inputs	• Protective Earth of FrigoPack connected to mounting plate (two separate short connections) ?	- Terminal:	2x PE	Yes ☐ No ☐
			• Is the DC P24 control voltage present ?	- Terminal:	15P - GN	Yes ☐ No ☐
			• Connection of PTC motor protection ?	- Without processing - Direct processing of motor thermistors - Processing an external thermistor relay - Terminal:	MOT/TEMP	Linked ☐ Direkt ☐ Relay ☐
			• Safety circuit OK ?	- Terminals for measuring:	19 - GN	Yes ☐ No ☐
			• Enable signal present ?	- Terminals for measuring:	12 - GN	Yes ☐ No ☐
			• *External setpoint or actuating signal present ?* *	- *Terminals for measuring:*	*5 - GN*	_____ *[V]*
			• Signal from suction-pressure transducer present ?	- Terminals for measuring:	2B - GN	_____ [V]
			• *Signal from high-pressure transducer present ?* *	- *Terminals for measuring:*	*3B - GN*	_____ *[V]*
			• *Signal from exhaust temperature transducer present (link if not used) ?* *	- *Terminals for measuring:* - *Terminals for measuring:*	*4B - GN* *4A - 4B*	_____ *[V]* Yes ☐ No ☐
			• * If used	- Terminal for measuring: - Measured against green terminal:	.. ..	
MM	PS	- Power section	• Reserved for future use			
MM	CA	- Control assembly	• Reserved for future use			
MM	CS	- Control settings, parameter	• Operating Mode LOCAL (Programming Pad: LEDs SEQ + REF light) ?	- Not suitable for normal operation, only use for commissioning:		Yes ☐ No ☐ Yes ☐ No ☐
			• Refrigeration / cooling parameters set ?	- The following parameters must be set: **08:**, **09:**, **10:**		Yes ☐ No ☐
RI		Refrigeration:				
	AP	- Application	• Required Refrigeration Power entered into PROBLEM REPORT ?			Yes ☐ No ☐
			• Number of cooling outputs entered into the PROBLEM REPORT ?			Yes ☐ No ☐
			• Operating pressure and temperatures entered into PROBLEM REPORT ?	- Operating point - At start up		Yes ☐ No ☐ Yes ☐ No ☐
			• On/Off times of compressor pack entered into PROBLEM REPORT ?	- Enter variable and fixed speed compressor times separately		Yes ☐ No ☐
RI	IN	- Installation	• Reserved for future use	- tbd		
RI	PS	- Pressure transducers	• Approx. cable length			_____ [m]
			• Type of screen	- Copper braid ?, Steel braid ?, - Steel conduit ?, none ?		Cu brd. ☐ Fe brd. ☐ Fe cond. ☐ None ☐
			• Screen NOT connected at sensor end ?			Yes ☐ No ☐
			• Screen connected to mounting plate of electricial enclosure ?	- Large area contact, no pig tails		Yes ☐ No ☐
			• Are measured pressures stable ?	- Indicate range of variation within 30 s		Yes ☐ No ☐ Po/LP ____ Pc/HP ____ [bar]
RI	RC	- Refrigeration compressor	• Oil present ?			Yes ☐ No ☐
			• Basic data entered into PROBLEM REPORT ?			Yes ☐ No ☐

CONFIGURATION OVERVIEW / PROBLEM REPORT
(Put cross in box where appropriate)

Application	Refrigeration ☐	No. of cooling outlets ____	Air Conditioning ☐	Condenser ☐	Other ____				
Refrigerant	R404A..... ☐	R407C..... ☐	R134a..... ☐	Total refrig. Power ____ [kW]	Other ____				
	R507A..... ☐	R22..... ☐	R.....		____				
Compressor 1	Piston ☐	No. of cylinders ____	Scroll ☐	Screw ☐	Other ____				
	Start unloader ☐	Part Winding ☐	Variable speed ☐ **OR**	Fixed speed ☐	No. of compressors ____				
	Capacity control ____ [%]	____ [%]	____ [%]	____ [%]					
	Manufacturer ____		Model ____		Anything special ____				
Compressor 2	Piston ☐	No. of cylinders ____	Scroll ☐	Screw ☐	Other ____				
	Start unloader ☐	Part Winding ☐	Variable speed ☐ **OR**	Fixed speed ☐	No. of compressors ____				
	Capacity control ____ [%]	____ [%]	____ [%]	____ [%]					
	Manufacturer ____		Model ____		Anything special ____				
Operating point	Suction pressure ____	High (discharge) pressure ____	Pascal/ ☐ bar/ ☐ lb/in² ☐ gauge/ ☐ absolute ☐	Suction gas temperature ____ [°C]	Discharge gas temperature ____ [°C]	Motor current ____ [A]			
Start up	Suction pressure ____	High (discharge) pressure ____		Anything special ____		Motor current ____ [A]			

FrigoPack Speed variator	**FrigoPack/**MotorMaster Type FP/MM Serial number ____	**Pressure sensors** Suction pressure ____ Discharge pressure ____	**FrigoSoft refrigeration/ A/C software** FS 2.5.2-1x Version ____ Mode ____
FrigoPack Soft Starter	**FrigoPack/**SoftCompact, LEKTROMIK/SoftPower Type FP/SC/LEK Serial number ____	**Switching times of compressor pack** Variable-speed compressor (VsC) t_{ON} ____ [s] t_{PERIOD} ____ [s] Fixed speed compressor(s) (FsCs) t_{ON} ____ [s] t_{PERIOD} ____ [s]	

Report

List of adjustable parameters in OPERATOR menu
FrigoPack FEP-12 / *FrigoSoft* 2.5

08:Po SETPOINT 1	3.3 bar	____	[bar]
09:Po SETPOINT 2	3.8 bar	____	[bar]
10:Po MINIMUM	2.5 bar	____	[bar]
11:Pc SETPOINT 1	17.3 bar	____	[bar]
12:Pc SETPOINT 2	20.1 bar	____	[bar]
13:Pc MAXIMUM	22.6 bar	____	[bar]
14:VsC FREQ MAX	60.0 Hz	____	[Hz]
15:VsC FREQ MIN	25.0 Hz	____	[Hz]
16:VsC FREQ BASE	55.0 Hz	____	[Hz]
17:VsC BOOST	F.00 %	____	[%]
18:VsC SKIP FREQ	0.0 Hz	____	[Hz]
19:VsC SKIP BAND	0.0 Hz	____	[Hz]
20:VsC tinh TIME	FFF.0 s	____	[s]
21:VsC toil TIME	4.0 s	____	[s]
22:VsC thld TIME	10.0 s	____	[s]
23:FsC ton DLY	FFF.0 s	____	[s]
24:FsC toff DLY	FF.F s	____	[s]
25:Po CNTRL P-GN	F.00	____	
26:Pc CNTRL P-GN	8.00	____	
27:VsF CD MIN SD	15.00	____	
28:Pc LIMIT P-GN	25.00	____	
29:Po ACT VAL=0%	6.5 bar	____	[bar]
30:AOUT1 FUNCTN	INPUT O	____	
31:AOUT3 FUNCTN	INPUT O	____	
32:CONTRL FUNCTN	INPUT O	____	

TRIP HISTORY

TRIP 1 (NEWEST) ____ 2 ____ 3 ____ 4 ____ 5 ____
6 ____ 7 ____ 8 ____ 9 ____ 10 (OLDEST) ____

Manufacturer	Agent / Partner	Customer	Installation
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