



Models	Ambient temperature	Frequency [Hz]	Cooling capacity [W]							
			Evaporation Temperature							
			-20°C	-15°C	-10°C	-5°C	0°C	5°C	10°C	15°C
SILAJ9513Z	25°C	30	817	1042	1301	1587	1928	2297	2704	3152
		60	1633	2083	2603	3183	3857	4585	5408	6305
	32°C	30	684	889	1122	1386	1681	2008	2371	2771
		60	1368	1777	2244	2772	3361	4016	4741	5543
	46°C	30	419	584	766	968	1191	1438	1713	2024
		60	839	1169	1532	1936	2382	2876	3426	4049
SILFH4524Z	25°C	30	1297	1674	2108	2596	3140	3739	4394	5109
		60	2594	3348	4216	5192	6280	7477	8788	10218
	32°C	30	1086	1433	1829	2273	2767	3311	3909	4566
		60	2172	2867	3658	4547	5534	6623	7818	9132
	46°C	30	649	934	1253	1609	2002	2438	2925	3476
		60	1298	1868	2507	3217	4004	4877	5850	6953
SILAG4546Z	25°C	30	2369	3062	3857	4750	5732	6797	7937	9150
		60	4739	6124	7715	9499	11465	13694	15874	18300
	32°C	30	1947	2578	3299	4106	4998	5968	7015	8146
		60	3894	5155	6598	8213	9996	11936	14030	16292
	46°C	30	1160	1663	2233	2889	3577	4359	5229	---
		60	2320	3326	4465	5738	7153	8718	10458	---
SILAG4568Z	25°C	30	3803	4843	5854	6826	8141	9584	11137	12790
		60	7607	9286	11309	13651	16282	19168	22274	25579
	32°C	30	3209	4016	4970	6062	7281	8614	10052	11594
		60	6418	8033	9941	12125	14562	17228	20105	23188
	46°C	30	2107	2818	3630	4541	5548	6653	7863	---
		60	4214	5636	7260	9082	11096	13306	15726	---
SILFH4525Y	25°C	30	1024	1644	2055	2522	3049	3639	4298	5035
		60	2048	3288	4110	5045	6097	7278	8597	10070
	32°C	30	1058	1400	1790	2232	2729	3286	3909	4606
		60	2116	2800	3580	4464	5458	6572	7818	9212
	46°C	30	612	919	1265	1655	2093	2582	---	---
		60	1224	1837	2531	3311	4186	5164	---	---
SILAG4534Y	25°C	30	1285	1939	2605	3385	4287	5318	6488	7801
		60	2570	3878	5209	6770	8574	10636	12972	15602
	32°C	30	1170	1658	2252	2956	3776	4721	5801	7025
		60	2340	3317	4504	5911	7553	9443	11602	14051
	46°C	30	751	1105	1554	2103	2760	3532	4431	5470
		60	1501	2210	3108	4206	5520	7064	8862	10839

Conditions of performance: EN13215, Subcooling 3K; Superheating: 10K

Technical Data Frequency Inverter					
SIL-AJ9513	Volt	Imax Comp.	Inverter; CIMR-	Max. Current:	MCB Protection
	400	4,0 A	VC4A0007BAA	8,3 A	10,0 A
FH4524	400	7,9 A	VC4A0011BAA	12,3 A	16,0 A
FH4525	400	7,3 A	VC4A0011BAA	12,3 A	16,0 A
AG4534	400	10,6 A	VC4A0018FAA	27,0 A	25,0 A
AG4546	400	11,4 A	VC4A0018FAA	27,0A	25,0 A
AGD4568	400	11,2 A	VC4A0018FAA	27,0A	25,0A

General technical data:		
	Name	Specification:
Input	Input Voltage Line frequency	3-Phase 400V -15% to +10% 50/60Hz +/- 5%
Output	Output frequency Overload capacity	Default setting: 30-60Hz 150% for 60s (HD)
Environment	Ambient temperature Humidity Storage temperature Altitude	-10°C to 50°C < 95%, non condensating -20°C to 60°C Max. 1000m Output de-rating >1000m, 1%/100m max. 3000m
	Vibration Safety standards	max. 5,9m/s ² UL508C; EN954-1 Kat.3 IEC/EN61508 SIL2
Misc.	IP - rate	IP20 or IP66

SF_V1000_VI_TECUMSEH_1.3_E_A4_0713.CDR

SILENSYS
Condensing Units
SILAJ9513Z
SILFH4524Z
SILAG4546Z
SILAG4568Z
SILFH4525Y
SILA4534Y
with built-in
V1000 frequency inverter



Short manual:
V1000 with Software for
speed control of
compressors units
integrated in SILENSYS
Condensing Units

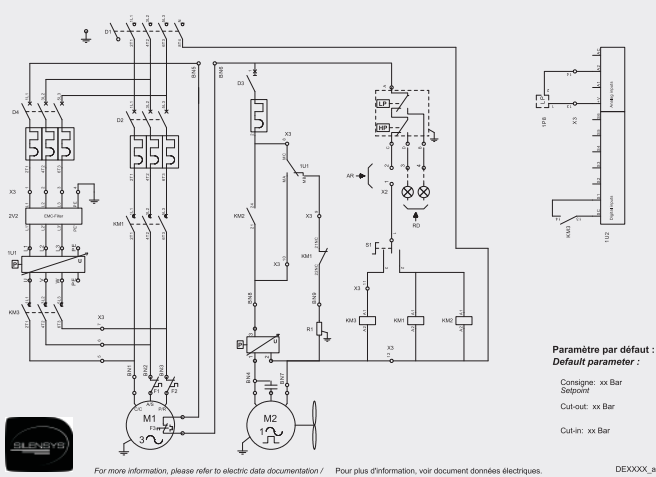
TECUMSEH EUROPE
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 Site Prologis Bât. B
 38090 Vaulx-Milieu
 France
Tel. int +33 (0)4 74 82 24 00
Fax int +33 (0)4 74 82 24 44

L1 Standard refrigeration parameter

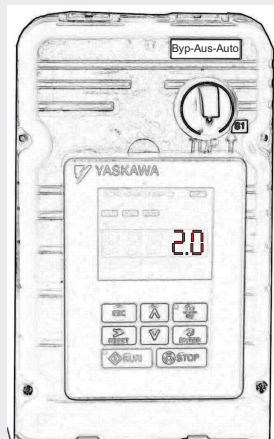
Parameter Number:	Range min. max.	Default Setting Value:	Change during operation, settings highlighted in red differ from default	Parameter-description
Sensor lower level	P1-01 -99 100 -08 N			The parameter P1-01 and P1-02 determine together the range of the pressure transducer. These settings are the reference to show the system pressure in real values in the display.
Sensor upper level	P1-02 -99 100 70 N			Only transducers with the following specification can be used: Voltage range: 8 to 30V/DC Pressure range: -0,8 to 7,0 Bar. Other values on demand.
Pressure reference setpoint in Bar	P1-03 -99 100 35 Y			This parameter determines the setpoint for suction pressure in the system.
AUTO-OFF Pressure in Bar	P1-04 -50 100 25 Y			Once the pressure level in the system is underneath the value in parameter P1-04 for the time set in parameter P1-05 the drive will switch automatically OFF. Example: According to factory settings the pressure must be for 10.0s below 1,5 Bar, then the drive is switching itself off.
AUTO-OFF Pressure time in sec	P1-05 00 3000 00 Y			
AUTO-ON Pressure (Hysteresis)	P1-06 00 400 10 Y			Once the pressure exceeds the value set in P1-06 + P1-04 for the time set in parameter P1-07 the inverter will automatically switch on again. Example: P1-04 = 1,5Bar; P1-06 = 1,0Bar ON Pressure: 1,5Bar + 1,0Bar = 2,5Bar
AUTO-ON Pressure time in sec	P1-07 00 3000 00 Y			
2. Reference via digital input	P1-08 -20 +20 0 N			Once a digital input has been set to mode "80" the pressure reference will change in accordance to the setting in case this input becomes active. Example: P1-03 = 3,0 Bar P1-08 = -2,0 Bar --> New reference: 1,0 Bar.
Display of the system pressure	U7-03 -99 100 88 N			Shows the system pressure and will be scaled in parameter P1-01 and P1-02 U7-02 Pressure reference (P1-03) U7-03 System pressure

L1 Standard refrigeration parameter

R1 Standard-wiring



Note:
Enlarged circuit diagram inside the door



Function rotary knob
Byp: The unit will run without inverter.
OFF: The unit is switched off.
AUTO: The unit is inverter driven.
 After Power ON the system pressure in Bar will be displayed.
 Press 2x "▲" key the display will indicate the values for the output frequency. By pressing "▼" key the display will indicate again the monitoring of the system pressure.

R1 Standard-Wiring

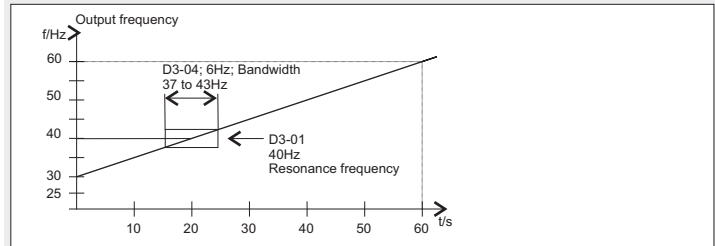
Skip output frequencies, Auto-Tuning

R7

Resonance frequency 1	D3-01 00 400 00 N	In order to avoid continuous operation at a speed that causes resonance in driven machinery, the V1000 can be programmed with 3 separate skip frequencies. This will not allow continued operation within specific frequency ranges. If the speed reference falls within a skip frequency dead band, the V1000 will clamp the frequency reference just below the dead band and only accelerate once the reference rises above the upper end of the dead band. The following conditions must be fulfilled: d3 - 01 > d3 - 02 > d3 - 03
Resonance frequency 2	D3-02 00 400 00 N	
Resonance frequency 3	D3-03 00 400 00 N	
Band width resonance frequency	D3-04 00 200 10 N	Is needed to set the band width of the resonance frequency in Hz. Example: Resonance frequency = 20Hz Bandwidth: 8Hz The skip frequency range is now between 16,0 and 24,0Hz.

Example for a skip frequency

R7.1



Autotuning, Safety-, EMC-recommendations

R7

The autotuning - function will measure and adjust all required motor data automatically. It is recommended to use the autotuning function with every new commissioning. If it is not possible to open the coupling the function "Autotuning with no rotate" should be chosen. Non correct settings will interrupt the autotuning process, respectively the motor will not run as smoothly.

Parameter Number:	Range min. max.	Default Setting Value:	Change during operation	Parameter-Description
-------------------	-----------------	------------------------	-------------------------	-----------------------

Autotuning Mode	F1-01 0 2 0 N	0=Rotating Autotuning (Vector-controlled) 1=Stationary Autotuning (Vector controlled) 2=Stationary Autotuning for line to line resistance. (Recommended) Choose mode and follow the menu.
Motor rated power	F1-02 0 999 0 N	Setup of the nameplate motor power in kW. This parameter generates the basis data to start with the autotuning function. Default values are depending on the inverter size.
Motor rated voltage	F1-03 0 510 400 N	The motor rated voltage is needed to adjust the V/Hz curve. Example: Motor 230/400V Delta E1-13 = 230V; E1-06 = 50Hz; E1-04 = 87Hz. E1-06 = Motor rated frequency.
Motor rated current	F1-04 0 999 0 N	With the setting of the motor rated current the V1000 could calculate a thermal model of the connected motor. This will prevent the motor to get overloaded (Fault: OL1)
Base frequency	F1-05 0 150 500 N	The base frequency of the motor determines the nameplate frequency of the connected motor.
Number of motor poles	F1-06 2 48 4 N	The number of motor poles is used to input data for the autotuning function.
Motor rated speed	F1-07 0 240 175 N	The rated motor speed is used as input data for the autotuning function.
Press "RUN" key	RUN START >>>> GOAL	Text message after successful autotuning: "Tuning successful" Repeat procedure once autotuning was interrupted with fault message.

Skip output frequencies, Auto-Tuning

R7

R6 Fault memory		
Fault:	Description	Cause / Action
GF	Ground fault	Current shorted to ground exceeded 50% motor current. Test of the V1000 without motor connected Check motor insulation
OC	Overcurrent	Output current of the V1000 is too high. Test with motor disconnected, Check motor insulation Eventually increase acceleration time in C1-01.
LF2	Current Imbalance	Output current imbalance. One motor phase at the output is missing, check wiring of the connected motor.
OU	Über-spannung	The DC-bus voltage has reached a value of 820V/DC. Increase the deceleration ramp rate. Check supply voltage (< 480V/AC +10%)
UJ1	DC-Bus too low	The DC-bus voltage is below 380V/DC. Check supply voltage and connections (> 350V/AC)
UJ2	Controlvolt. too low	The control voltage has reached a critical level. Check control terminals on short circuits or high consumption: Switch OFF and ON
UJ3	Soft charge circuitry	Fault while DC-bus capacitors were soft charged. Power OF and ON again, if problem still exist unit needs to be replaced.
PF	Input Phase loss	Ripple in the DC-bus too high (only if L8-05=1) Check supply voltage
LF	Output phase loss	Phase loss at the output (only if L8.07 = 1) Cable break at the motor cables, underload Check motor power and cabling
Oh	Over temperature	The heatsink temperature has exceeded 105°C. Check drive fan, ambient temperature and dust filter.
OL1	Motor overload	Motor overload due to the thermal model of the V1000 which has calculated an overload, ramp rates too short Check motor rated current in E2-01 V/Hz curve in E1-02 Check acceleration ramp rate in C1-01 evtl. too short Check deceleration ramp rate in C1-02 evtl. too short
OL2	V1000 overload	Variable speed drive overloaded Load too high, Ramp rates too short Check rated current in E2-01 V/Hz curve in E1-02 Check acceleration ramp rate in C1-01 evtl. too short Check deceleration ramp rate in C1-02 evtl. too short
UL3	V1000 underload	Torque below setting (only if L6-01 = 7 or 8) Belt monitoring Check mechanical setup
FbL	PID feedback loss	PID-feedback loss (only if B5-12 = 2) Check pressure transducer
EF3	External Fault 3	External fault at digital input S3 EF4 = S4; EF5 = S5; EF6 = S6; EF7 = S7 Check control wiring and find what has caused this.
CPF--	CPF XX Fault	Control board failure Power OF and ON again, if problem still exist unit needs to be replaced.

R6.1 Alarm messages

Alarms shall protect the V1000 and do not cause tripping of the inverter. During alarm the display is blinking. After fixing the problem which has caused the alarm the V1000 returns automatically back to the status which was in case before the alarm.

R6.2 Programming failures (OPE)

OPE01	kVA failure	Failure V1000 sizing on parameter 02-04 Check input data of parameter 02-04 via display.
OPE02	Range exceeded	Failure V1000 sizing on parameter 02-04 Check input data of parameter 02-04 via display.
OPE03	Double Input	Some of the digital inputs were programmed with the same function or mode. Ceck digital inputs.

R6.3 Autotuning Faults (Er)

Er-01	Motor data fault	Failure data input, difference between motor power setting and motor current adjustment. Check motor data
Er-02	Alarm	Fault during autotuning. Check motor data, wiring and load, repeat autotuning

R6.4 Failure copy function of the display

PrE	Write protection	Failure write/read function from/to the display. Protection mode still active. Change Parameter 03-02 = Mode 1
LAE	Wrong device	Drive data are not correct. Ceck data in parameter 02-04.

Caution: These messages are selected from the manual and are not complete.
Manual: YEG-SIEP C7 10606 19a

R6 Fault memory

Low Pressure Bypass at Start

L2

The integrated Low Pressure switch OFF can be bypassed at every new START command the V1000 is receiving. For safety reasons this function is not completely de-activated, it needs new settings with values underneath the standard low pressure configuration.



Low Pressure Bypass at Start

L2.1

Low pressure off level at "Start"

At every start of the compressor the low pressure switch OFF level will be reduced for the time set in parameter P1-11.

P1-10 -50 50 15 Y

Low pressure time at "Start"

Determines the time were the low pressure OFF level at start is active. This function is not active once the value will be set to "0" in the parameter.

P1-11 0 300 0 N

Behaviour on power ON

L2.2

Behaviour on power ON

Determines the reaction of the drive on power on of the V1000:
Mode 0:
Low pressure function not active
Mode 1:
Start without delay
Mode 2:
Start with delay according to P1-07
Mode 3:
Start depending on the pressure at P1-04

P1-12 0 3 3 N

Oil-Reflow-function

L2.3

Time oil reflow in seconds

Once the V1000 is running with an output frequency which is below the value set in parameter P2-07 for the time set in parameter P2-06 the oil-reflow function will become active.

P2-06 0 300 300 N

Frequency Oil-Reflow in Hz

Caution: Once the oil-reflow is active the user must ensure that all refrigeration load will be switched on to avoid tripping due to low system pressure.

P2-07 0 400 35 N

Oil-reflow running time in seconds

Once the oil reflow function is active the V1000 will accelerate the compressor to rated speed for the time set in this parameter.

P2-08 0 300 60 N

Output relay MA/MC

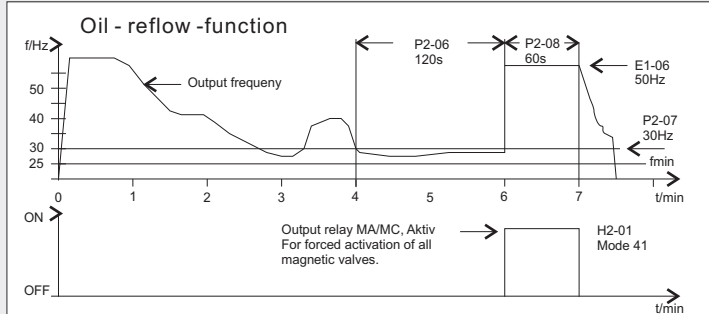
Mode "41" for the output relay will be used to switch on all refrigeration load in the system while the oil-reflow mode is active.

H2-01 0 192 41 N

Oil-Reflow at start

Once this function is active (Mode 1) the V1000 will run with rated speed for the time set in parameter P2-08 at every time it gets a start command.

P2-09 0 1 0 N

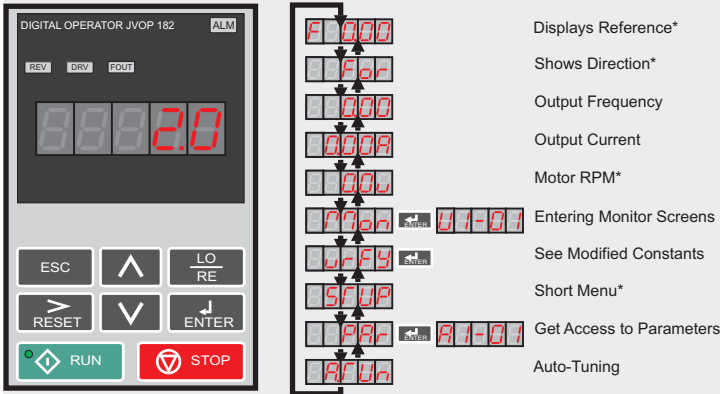


Low Pressure at Start, Oil - Reflow

L2

L3 Operation and Programming

L3.1 Function of the operator (LED Display)



UMSCHALT / RESET - key
Selects the active digit, works also as RESET-key



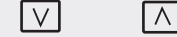
ENTER - key
Selects all modes, parameters, settings etc.



ESC - key
Returns to the previous menu before **ENTER** key was pressed.



Pressing **UP** -key or **DOWN** -key
Selects parameter and increases or decreases the requested values



LOCAL/REMOTE - key
Local: Control via operator
Remote: Control via terminals



RUN - key
Starts the V1000



STOP - key
Stops the V1000



Remark: This manual must be seen in addition with the standard manual no: A1000 QSG Deutsch.pdf.

L3.2 Programming example

Change suction pressure from 3,0 to 4,0 Bar in parameter P1-03.

Press key until display shows (Highlighted **RED** is LED Displays):

- PAR** programming Enables access to all parameter programming
- Press **ENTER** key Selects parameter group "Programming" Display: **A1-00** ("A" is blinking)
- P1-01** minTransducer **P**- is blinking Parameter group **P** is selected
- P1-01** minTransducer **1**- is blinking Parameter group **P1** is selected
- P1-01** min Transducer **01**- is blinking Parameter **P1-01** is selected
- P1-03** Pressure reference **03** is blinking (on default) Shows value in parameter **P1-03**
- 002.5bar** Pressure reference Blinking shows the digit which can be changed,
- 002.5bar** New reference Pressing ""RESET"" key will change digit
- 003.5bar** New reference Press UP or DOWN and modify to new value.
- INPUT OK** (For ~ 3sec) Once data input has made correct, INPUT OK will be displayed in the LCD display.

Select the right digit:

- 00030** Press **Reset** - key will select the appropriate digit..
- 00030** > Change value with **UP** or **DOWN** key.
- 00030** > Confirm data input with the **ENTER** - key.
- Change value:**
- 00040** Enter-key confirms data input
- 00030** Value increase
- 00030** Value decrease
- 00020** Enter-key confirms data input

Monitor screens U1-XX

R5

Mode:	Description	Function:
01	Frequency reference	Shows the value of the frequency reference. This reference is not used in the refrigeration software. Min. unit: 0,01 Hz
02	Output frequency	Shows the current output frequency. Min. Unit: 0,01 Hz
03	Output current	Shows the output current. Unit: 0,01 A
06	Output voltage	Shows the momentary output voltage Min. Unit: 0,1 V
07	DC-Bus voltage	Shows the DC-Bus voltage UDC/√2=Input or supply voltage 565V/DC / 1,414 = 400V Uin
08	Output power	Shows the putput power in kW. Min. Unit: 0,1 KW
10	Input terminals status	U1-10 = Example see left side: S6S5S4S3S2S1 Rest = no Signal
11	Output terminals Status	U1-11 = Example see left side: n. used P2P1MA Relay MA/MC = active PCPCMC P1/PC and P2/PC = not active
13	Level terminal A1	Shows the input level at analogue input A1. 0% --> 0V or -10V (according to h3-01) 100% --> 10V
14	Level terminal A2	Shows the input level at analogue input A2. 0% --> 0V; -10V or 4 mA (according to h3-08) 100% --> +10V or 20mA

Fault monitoring U2-XX

R5.1

01	Actual fault	Shows the failure code of the actual fault. Failure code according to table R9 No fault = NONE
02	Last fault	Shows the failure code of the last fault. Failure code according to table R9 No fault = "NONE"
03	Reference at last fault	Shows the reference speed while the drive was tripping last time.
04	Output frequency at last fault	Shows the output speed while the drive was tripping last time.
05	Output current at last fault	Shows the output current while the drive was tripping last time.
08	DC-Bus voltage at last fault	Shows the DC-Bus voltage while the drive was tripping last time.
11	Status Input terminals	U1-10 = Shows the status of the input terminals while the drive was tripping last time.
14	Running time at last fault	Shows the running time while the drive was tripping last time.

Fault history U3-XX

R5.2

01	Failure code last fault	U3-02 failure code 2nd most recent fault U3-03 failure code 3rd most recent fault U3-XX
09	Failure code 9th most recent fault	U3-09 failure code 9th most recent fault U3-10 Operation time last fault U3-11 Operation time 2nd most recent fault
11	Operation time last fault	U3-12 Operation time 3rd most recent fault U3-XX
20	Operation time 9th most recent fault	U3-20 Operation time 9th most recent fault

Important:
The following failure codes will be not monitored in the fault history screens:
CPF00 Fault display communication
CPF01 Fault display communication
CPF03 EEPROM failure
UV1 Low voltage fault
UV2 Low voltage control supply

Maintenance Monitor U4-XX

R5.3

01	Accumulated operation time	Shows the total operation time of the drive and can be reset with parameter o4-01.
02	Number of RUN commands	Displays the number of times the RUN command has been entered and can be reset with parameter O4-13.
08	heatsink temperature	Shows the heatsink temperature in °C.
13	Max. output current	Displays the max. current during RUN status.

Pressure Monitor U7-XX

R5.4

02	Reference for the system pressure	Displays the reference for the suction pressure in Bar in the system and will be set with parameter P1-03 in standard applications.
03	System pressure	Displays the actual suction pressure in the system in Bar.
04	Compound Counter	Once the system is reaching the conditions to switch ON or OFF the 2nd compressor a down counter will display the remaining time.

This is only a selection from the Yaskawa manual YEG-SIEP C7 10606 19a of the screens mostly in use and does not demand any requirements for completeness.

R3 Modes for In- and Outputs

R3.1 Modes digital inputs S3 to S6 (h1-01 - h1-06)

Modes:	Description	Function:
03	Multi-step speed 1	The V1000 is running the motor with the speed programmed in parameter D1-02 (or h3-09 = mode 2) This is the default setting for digital input S5.
04	Multi-step speed 2	The V1000 is running the motor with the speed programmed in parameter D1-03 This is the default setting for digital input S6.
05	Multi-step speed 3	The V1000 is running the motor with the speed programmed in parameter D1-05.
06	JOG-speed	The V1000 is running the motor with the speed programmed in parameter D1-17. This setting has got priority amongst other reference frequencies.
08	Ext. base block n.o.	External base block (no), the drive output will be switched OFF once a signal occurs at a digital input. This will be indicated with a "bb" message in the display.
09	Ext. base block n.c.	External base block (nc), the drive output will be switched OFF once signal gets lost at a digital input. This will be indicated with a "bb" message in the display.
0F	Not used	This particular input is without function.
14	Fault RESET	On signal input the V1000 will be reset after it tripped, this mode is default for digital input S4. The cause for the trip must be fixed before reset will be activated.
15	Emergency-Stop	Signal input at a digital input with this mode will stop the motor with the ramp rate set in parameter C1-09.
19	PID-loop OFF	On signal input the V1000 will switch OFF the PID loop.
24	Ext. fault n.o.	On signal input the V1000 will tripp with fault message "EFX" (X=S3 bis S6). It needs a reset signal to restart.
25	Ext. fault n.c.	Once signal gets lost at a digital input of the V1000 it will tripp with fault message "EFX" (X=S3 bis S6). It needs a reset signal to restart.
2C	Ext. fault warning n.o.	On signal input the V1000 will indicate a warning message "EFX" (X=S3 bis S6) on the display. It will continue to run.
2D	Ext. fault warning n.c.	Once signal gets lost at a digital input of the V1000 it will indicate a warning message "EFX" (X=S3 bis S6) on the display.
35	PID-loop Invert	On signal the PID loop signal will be inverted.

R3.3 Modes digital outputs 1 to 3 (h2-01 - h2-03)

00	During Run	Closed: A run command is active or voltage is at the output. Default for output 2 (P1) =h2-02.
01	Zero speed	Closed: Output frequency is zero.
02	User set speed agree 1	Closed: Output speed equals the speed reference (plus or minus the hysteresis set in L4-02 (Band width).
06	V1000 is ready	Closed: Drive ready. The drive is powered up, not in a fault state and in DRIVE mode.
0C	Frequency reference loss	Closed: Loss of the analogue frequency reference detected. Enable when L4-05 = 1.
0E	Fault	Closed: Fault occured (other than CPF00 and CPF01)
10	Minor fault	Closed: An alarm is triggered.
20	oH pre alarm	Closed: Heatsink temperature exceeds parameter L8-02 value; Default: 95°C
37	During frequency output	Closed: Frequency is given to the output. Open: Operation stopped; baseblock; DC injection braking or initial excitation is performed.

R3.3 Modes analogue input A2 (h3-10)

02	2. reference	Once one of digital inputs S3 to S7 is programmed in mode 3, analogue input A2 will be used as reference frequency (Standard A1).
06	feedback for PID-loop	With this mode the analogue input A2 is used as a feedback source for the PID loop.

R3.4 Modes analog outputs AM (h4-01)

01	Frequency refernece	Shows the actual frequency reference as a 0-10V signal, 10V = max. fFrequency.
02	Output frequency	Shows the actual output frequency as a 0-10V signa. 10V = max. frequency according to E1-04.
03	Output current	Shows the actual output current of the V1000. 10V = rated current of the V1000 Frequenzumrichters.
24	PID-feedback value	Shows the actual PID feedback signal. 10V = 100% feedback value.

This is only a selection from the Yaskawa manual YEG-SIEP C7 10606 19a of the screens mostly in use and does not demand any requirements for completeness.

R3 Modes for In- and Outputs

L4 Check-list Commissioning

L4.1 Remarks:

The following list is not demanding any requirements for completeness. Qualified personal on site is responsible that the equipment will comply with relevant standards an law.

L4.2 Proceedure:

L4.2.1 Check of the variable speed drive:

+ Type: CIMR-

+ Serial number:

+ Fuses: A

+ Supply cable: mm²

+Voltage: V

L4.2.2 Compressor check:

+ Manufacturer: TECUMSEH

+ Type:

+ Max. operating current: A

+ Refrigerant:

+ Evaporation temperature: °C

+ Evaporation pressure: Bar

L4.2.3 Transducer Check :

+ Manufacturer:

+ Type:

+ Range:

+ Anschluss:

Check transducer connection. The supply voltage for the transducer must not exceed 10V/DC ;20mA.

L4.2.4 Power ON, Status messages:



The display will show the Evaporation pressure after power ON once all settings were done correctly.

Wrong connection of the pressure transducer or even not connected will display the following message after power ON.

L4 Check list Commissioning

R1 Mostly used standard-parameter I

Parameter Number:	Range min. max.	Default Setting Value:	Change during operation, settings highlighted in red differ from default	Parameter-description
Language selection	A1-00 0 6 2 N			Determines the language selection of the LCD-Display of the V1000. 0=English; 2=German; 3=French 4=Italian; 5=Spanish; 6=Portugese
Parameter access level	A1-01 0 2 2 N			Determines parameter access for the user: 0 = Read only (Apart from A1-01; A1-04) 1 = Only user parameter A2-01 to A2-32 2 = Read and write access for all parameter.
Select control mode	A1-02 0 3 2 N			Selects the motor control mode 0 = V/Hz control 2 = OLV Open loop vector control 5 = PM Open loop vector control
Initialization	A1-03 0 333 0 N			Sets the V1000 back to default values: 0 = No Initialization 110 = Init. User Parameter 220 = Init. Default values (2-Wire) 330 = Init. 3-wire Control
Reference source selection	61-01 0 5 5 N			Determines the reference source: 0 = Digital operator 1 = Analogue inputs via terminals 2 = Serial Communication 3 = Option PCB, 5 = CASE-Software
RUN Command selection	61-02 0 5 5 N			Determines source for the RUN command: 0 = Digital Operator 1 = >Digital inputs via terminals 2 = Serial Communication 3 = Option PCB; 5 = CASE-Software
Stop-command selection	61-03 0 3 1 N			Determines the stopping method: 0 = Stop with ramp rate C1-01 1 = Spin Stop 2 = DC-Braking to stop 3 = Coast with timer
Reverse operation lock	61-04 0 3 0 N			Permits or prohibits reverse operation mode: 0 = Reverse mode enable 1 = Reverse mode disabled
PID-function setting	65-01 0 3 1 N			0 = PID disabled 1 = PID Active
Proportional gain setting	65-02 00 250 3 J			Sets the proportional gain of the PID loop. Caution: A too high gain may cause instability in the system. A too low value may increase the PID error..
Integrationszeit	65-03 00 360 2 J			Sets the integral time of the PID loop. Caution: A too short time may cause instability in the system. A too slow time may increase the PID error.
PID-Output level selection.	65-09 0 1 1 N			Sets the output direction: 0 = normal --> Decreasing feedback will increase output signal. 1 = Invers --> Increasing feedback will increase output signal.
Acceleration time in seconds	E1-01 00 600 10 J			Determines the acceleration ramp rate after receipt of a start signal from 0Hz to max speed according to parameter E1-04; Default: 60Hz
Deceleration in seconds	E1-02 00 600 10 J			Determines the deceleration ramp rate after receipt of a stop signal from max. frequency to 0Hz according to parameter E1-04; Default: 60Hz
Carrier frequency	E6-02 0 F 1 N			Default values are depending on the size of the V1000: 0=Low carrier frequency mode 1=2,0kHz; 2=5kHz; 3=8,0kHz; 4=10,0kHz; 5=12,5kHz; 6=15,0kHz; F=Free programm.
Fixed speed D1-01 to D1-16	D1-01 0 600 00 J			There are up to 16 multi step frequencies which can be set via the terminals S3 to S6. D1-16 determines the frequency once the feedback pressure reference gets lost. Default: 30 Hz.
Jog frequency reference	D1-17 0 600 60 J			The JOG frequency has got priority against other frequency references. Needs a digital input to be active parameter h1-XX in mode "6".
Upper frequency limit	D2-01 0 110 100 N			Sets the upper limit of the output frequency as a percentage of the max. output frequency according to E1-04.
Lower frequency limit	D2-02 0 110 50 N			Sets the limit limit of the output frequency as a percentage of the max. output frequency according to E1-04.
Maximum output frequenz	E1-04 40 400 600 N			Determines the max. output frequency of the connected motor. The following conditions must be fulfilled: E1-04 => E1-06 => E1-07 => E1-09
Max. ouput voltage	E1-05 0 510 400 N			Determines the max. output voltage and is needed to adjust the V/Hz curve of the connected motor/Compressor. See: E1-06 and E1-13

This is only a selection from the Yaskawa manual YEG-SIEP C7 10606 19a of the screens mostly in use and does not demand any requirements for completeness.

R1 Mostly used standard-parameter I

Mostly used Standard-Parameter II

Parameter Number:	Range min. max.	Default Setting Value:	Change during operation, settings highlighted in red differ from default	Parameter-description
Motor nameplate frequency	E1-06 0 400 60 N			Rated motor frequency and voltage, is needed to adjust the V/Hz curve. Example: 87Hz Operation:
Motor nameplate voltage	E1-13 0 510 400 N			Motor 230/400V; connected in Delta E1-04 = 87Hz max. Output frequency E1-05 = 400V max. Output voltage E1-06 = 50Hz Base frequency (Nameplate) E1-13 = 230V Motor rated voltage
Motor rated current	E2-01 0 999 0 N			With the input of the rated motor current the V1000 will calculate a thermal model of the connected motor to protect against overheating. If the compressor would run too long at low speed, it will trip with fault "OL1."
Number of motor poles	E2-04 2 48 4 N			Determines the amount of motor poles and is used as basic data to calculate the auto-tuning function..
Motor nameplate power	E2-11 0 999 0 N			Determines the motor shaftpower and is used as a basic data for the calculation of the autotuning function. Default values may differ due to the size of the variable speed drive.
Modes digital inputs S1 to S6	h1-01 0 78 0 N			The mode of the digital inputs S1 - S7 is selectable according to table R6.1. The default settings are:
Modes digital inputs S1 to S6	h1-06 0 78 0 N			S1 = Start forward command (h1-01) S2 = Start reverse command (h1-02) S3 = 24 External fault (h1-03) S4 = 14 RESET (h1-04) S5 = 03 Multifrequency 1 (h1-05) S6 = 04 Multifrequency 2 (h1-06)
Modes digital outputs 1, 2, 3	h2-01 0 192 8 N			The digital outputs MA/MB/MC, P1/PC; P2/PC are free selectable according to table R4.2. The default values are: MA/MB/MC = "E"; Fault (h2-01) P1/PC = "0"; During RUN (h2-02) V1000 has received a start command or is already running. P1/PC = "2" Speed agree 1" (h2-03)
Modes digital outputs 1, 2, 3	h2-03 0 192 2 N			
Gain analogue Input A1	h3-03 0 100 100 J			Sets the level of the analogue input A1 when 10V is input at terminal A1. Parameter H3-10 determines the gain on analogue input A2 Range: -999,9 to 999,9
Bias analogue Input A1	h3-04 0 100 00 J			Sets the level of the analogue input A1 when 0V is input at terminal A1. Parameter H3-11 determines the bias for analogue input A2 Range: -999,9 to +999,9%
Modes for analogue Input A2	h3-10 0 31 6 N			This function determines the functions of analogue input A2 and can be selected with table R6.3. Parameter H3-02 determines the functions for analogue input A1.
Function analogue Output AM	h4-01 1 31 6 N			The function of the 0-10V analogue output FM is depending on the settings in accordance with the monitor screens at page R5. Range: 0 to 999.
Gain analogue output AM	h4-02 0 100 100 J			Determines the gain of the analogue output AM. Range: -999,9 to 999,9%
Bias analogue ouput AM	h4-03 0 100 0 J			Determines the bias (Offset) of the analogue output AM. Range: -999,9 to +999,9%
Power loss operation mode	L2-01 0 2 0 N			Determines the reaction of the V1000 on momentary power loss: 0 = Trips with fault: Uv1 (Undervoltage) 1 = Re-start depending on settings of L2-02 2 = Re-start as long CPU is active
Number of Autoreset starts	L5-01 0 10 0 N			Determines how often the V1000 will automatically reset the drive after it tripped with fault and will try to start again.
Fault reset interval time	L5-04 05 600 10 J			Once the V1000 trips with active autotreset function (L5-01) this parameter will set the time to wait until the start shall happen. The delay time for the re-start is given in seconds.
Function "STOP"-key	02-02 0 1 1 N			Once the Start/Stop control is given through the terminals the STOP can be set as follows: 0 = STOP-key is disabled 1 = STOP-key is enabled.
Mode copy function	03-01 0 3 0 N			This function has got the following modes: 0 = Normal operation 1 = READ from V1000 to Display 2 = WRITE from Display to V1000 3 = COMPARE
Activate copy function	03-02 0 1 0 N			Before using the copy function it must be activated. Mode 0 = Copy function not active Mode 1 = Copy function is active

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Mostly used standard-parameter II

R2