Hydrokon
Pump & Booster Frequency Control Unit
User Manuel

Dear Customer,

Thanks for selecting our product. To use this product correctly, make sure that you read this manual carefully and keep the manual safe together with the warranty card.

Warnings

• Cut off the power sUpply before assembling the device.

NOTE: Standard power loss (Watt) = 3% of device power
ΔT = Temperature difference in the cabin (°C)
3.1 = Specific heat of air at sea level

Min. Operating Temperature = 0°C
Max. Operating Temperature = 50°C

• Wait for 5 minutes before opening the cover after the power is cut postoperation (for the discharging of DC capacitors).

Attention!

If the device is not connected in line with the specified rules, there is always the risk of mild and severe injury, death and material damage. Thus, all settings should be done by expert personnel paying ultimate attention to the security warnings and precautions.

Warranty Conditions

• Do not drop the device, expose it to frequent shock.
• Operate the device in a non-vibrating environment.
• Do not assemble the device near an electromagnetic radiation source.
• Ensure the cable connections of the device are correct and complete.
• Prevent any arc on the connection cables.
• Ensure the grid frequency is 47Hz-63Hz.
• Take additional precautions against stroke of lightning on the grid.
• Prevent instantaneous voltage fluctuations on the grid.
• Keep the grid voltage in the given range.

Note: The device will be out of warranty in any failure that will arise due to the reasons mentioned above.

General Features

• 2* 16 characters LCD screen.
• Power On / Running / General Error LEDs
• Assembly on the standard electrical motor with special apparatus
• Driving a total of 4 pumps with Hydrokon driver (1 master + 3 slaves)
• IP55 protection class
• Easy programming
• 120% loading for 60 seconds
• Operating temperature range between 0°C and 50°C
• Programmable start and stop ramps
• High and low voltage protection
• Short circuit protection on motor terminals
• Programmable sleep and wakeUp times (for the main pump)
• Programmable start and stop times (for the stand by pumps)
• Pump recognition
• Data transfer to building automation system through MODBUS via RS485 interface
• Operation with 1 unit of 4-20mA pressure transmitter in booster mode and 2 units of 4-20mA pressure transmitters in circulation mode
• Hydrokon frequency controler has a harmonics filter technology against harmful electrical stress.
• Hydrokon passed the tests which are in the scope of IEC 60204-1: 2006/AC 2010 standart succesfully.
• Hydrokon compliances 2006/42/AT directive and EN ISO 12100:2010 harmonics standart and it passed the tests succesfully.

Protections

- **Low Voltage Protection:** Low voltage fault appears on screen in case sUpply voltage is lower than %20 of nominal value

- **High Voltage Protection:** High voltage fault appears on screen in case sUpply voltage is higher than %20 of nominal value

- **Overheating Protection:** Overheating fault appears on screen in case the body temperature of device is higher than 80 °C

- **Phase Protection:** Phase fault appears in case there is a missing phase on three phase version of device

- **Short circuit protection:** Motor short circuit fault appears in case there is a short circuit on motor connections.

- **Protection against lack of water operation with float switch**

Electrical Assembly

- Cable thickness and fuse capacities should be selected according to the device input and output current values.

- Power sUpply line cables and cables that control inductive load such as relay windings must be aparted from each other and located vertically not horizontally. Control cables must be used isolated type.

- Earth connection of device should not be short-circuited with neutral line.

Mains SUpply - Device Connection

- Ensure the power sUpply voltage and current are compatible with the device, and there are compatible circuit breakers between the mains and the device.

- Cut off the power on the mains before connecting the device.

- Connect the device by tightening the connectors well without leaving any naked cable or causing short circuits.

Caution! Never use the same cable conduit.

Driver – Motor Connection

- Driver and motor current values must be checked if they are compatible
- Any kind of fuse must not be located between driver and motor.
- Motor driver connections must be four wired and shielded and connected to U,V,W terminals of motor. In addition to this shield of cable must be connected to earth terminal of motor and driver. Total cable length can not exceed 25 m.

NOTE : Please refer to the technical specifications section of user manual for cable thickness.
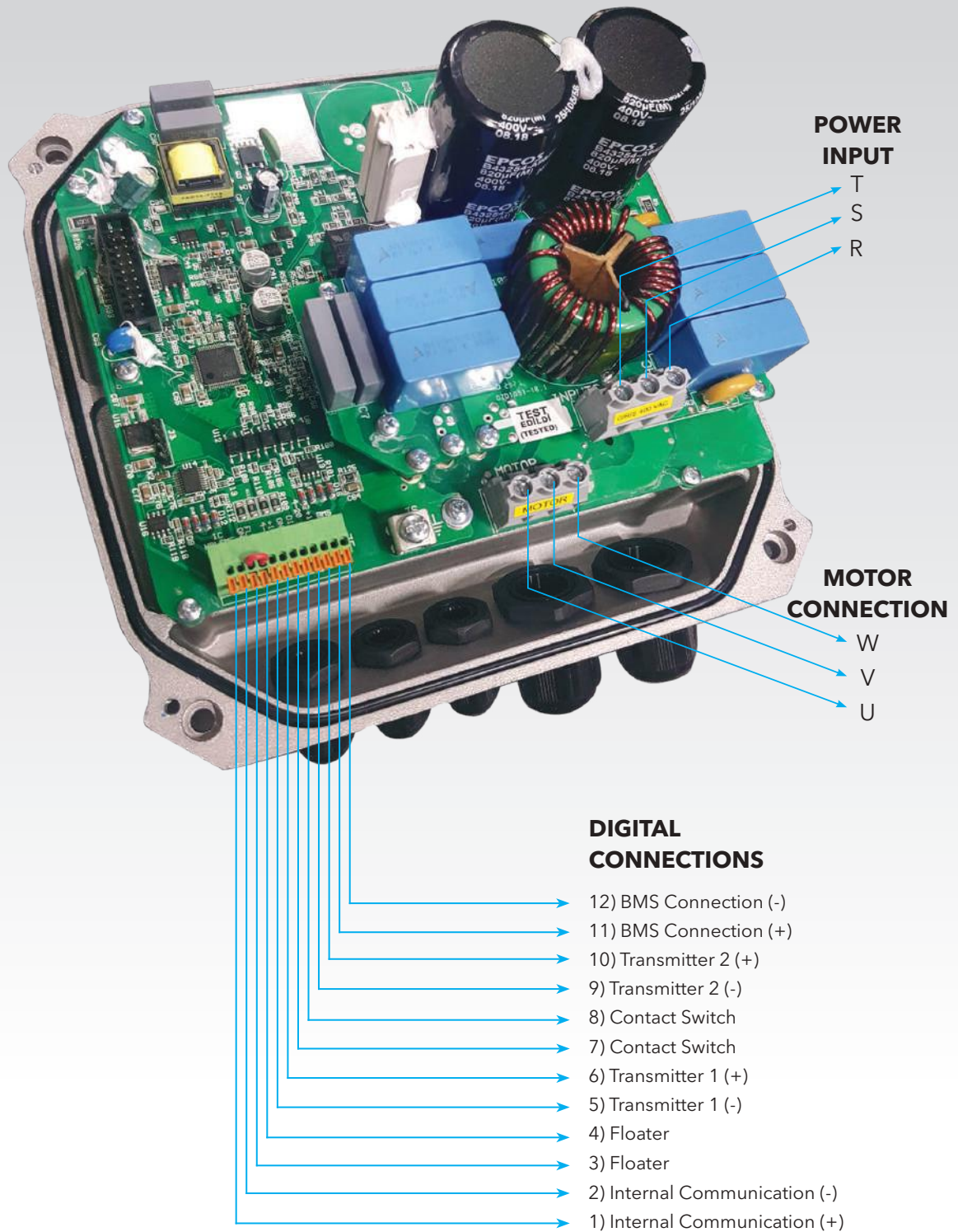
Control Cables Connection

Shielded cable mut be used as control cables and shiled part must be grounded. (Please do not connect to neutral)

ATTENTION: Control cables, power sUpply and motor cables must be separated. CAN NOT BE LOCATED in the same cable channel.
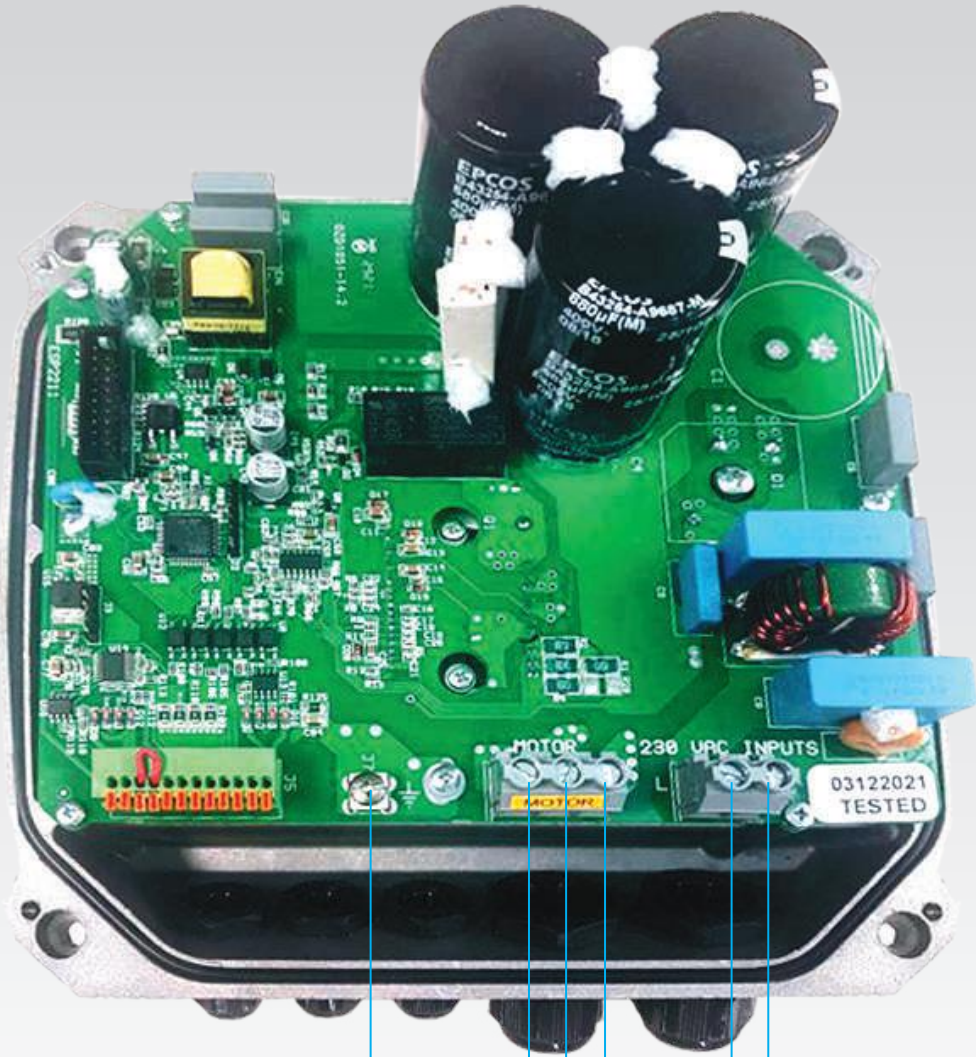
Frequency Inverter Assembly

1 Take out the inverter from the box.
2 Check whether there is a physical damage.
3 Locate the inverter as aluminium side Up and balanced on the motor fan cover.
4 Take out the assembly clamps of the inverter.
5 Disassemble the Upper cover by unbolting the 4 bolts located on the corner of the cover.
6 Locate M5 x 50 mm sized screws on the inverter aluminium body.
7 Fix assembly clamps by screwing M5 x 50 mm screws.
8 Fix assembly clamps to motor fan cover.
9 Fix the inverter to the by screwing the assembly clamp screws. (M5 x 50 mm fixing screw heads must be inside of the screw slots otherwise Upper cover and gasket can not be located properly and the parts can not be sealed.
10 Disassemble the sealing component inside the cable glands and locate cables inside the glands.
11 Connect Transmitter, Floater and RS485 cables to spring terminals.
12 Connect motor cables including earth connection.
13 Connect power supply cables including earth connection.
14 Assemble Upper cover to aluminium bosy properly.
15 DO NOT switch on the power until Upper cover located properly.
16 Make sure that Upper cover is located properly.
17 Switch on the power sUpply .
18 Set the parameters according to the working condition.
19 The device will be on operation mode after leaving the set parameter mode.

ETNA®

POWER INPUT
- T
- S
- R

MOTOR CONNECTION
- W
- V
- U

DIGITAL CONNECTIONS

12) BMS Connection (-)
11) BMS Connection (+)
10) Transmitter 2 (+)
9) Transmitter 2 (-)
8) Contact Switch
7) Contact Switch
6) Transmitter 1 (+)
5) Transmitter 1 (-)
4) Floater
3) Floater
2) Internal Communication (-)
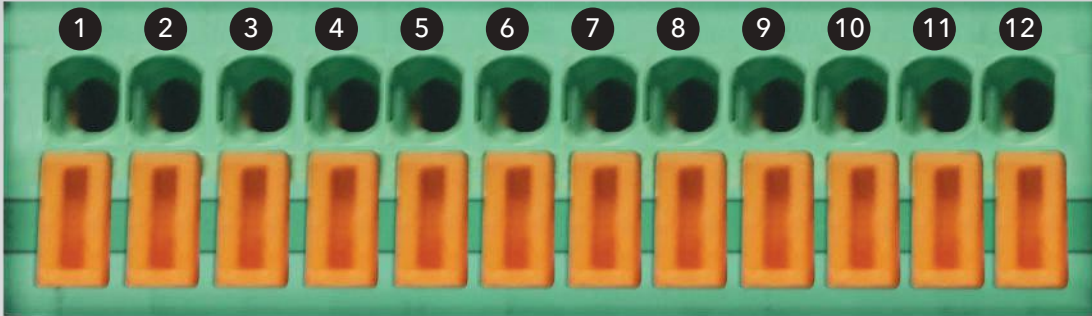1) Internal Communication (+)

GROUNDING

MOTOR CONNECTION

W
V
U

INPUT

220 V
0 (NÖTR)

Connector No. 1   **:** RS485 communication (+) terminal
Connector No. 2   **:** RS485 communication (-) terminal
Connector No. 3   **:** 1. External contact tip (0v) GND.
Connector No. 4   **:** 1. External contact tip.
Connector No. 5   **:** 1. Pressure sensor (4-20 mA) (-)
Connector No. 6   **:** 1. Pressure sensor (4-20 mA) (+)
Connector No. 7   **:** 2. External contact tip (0v) GND.
Connector No. 8   **:** 2. External contact tip.
Connector No. 9   **:** 2. Pressure sensor (4-20 mA) (-)
Connector No. 10 : 2. Pressure sensor (4-20 mA) (+)
Connector No. 11 : BMS Communication (RS485) (+)
Connector No. 12 : BMS Communication (RS485) (-)

Connect External Contact 1 and floater, if any. Otherwise bridge the contact switch.
1. Connect the pressure sensor's (4-20 mA) (+) and (-) terminals correctly..

Sample Parameter Setting

Setting Booster Parameters

NOTE: These settings are for the Master device.

Enter the motor current to the parameter P0007. Enter the operating pressure to the parameter P0009 (Ex. 4.0 bar). Enter the maximum pressure of the pump to the parameter P0015. Or set parameter P0018 and exit the program. (Note: After turning off the valve in the delivery part (given that there are no expansion tanks between the valve and the pump), set the autoset parameter.)

The device calculates this pressure automatically.

NOTE: Parameters P0009 and P0015 are also must be set for slave devices same as master.

Setting Circulating Pump Parameters

Enter the differential pressure value of the system to the parameter P0009 (ΔP, ex. 1bar). Enter the maximum pressure of the pump to the parameter
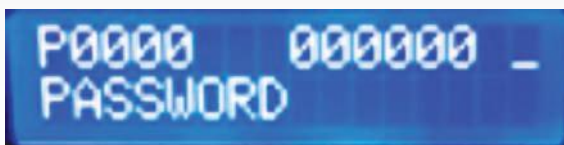
1. STEP

Press **P** button and PASSWORD screen will be displayed.

2. STEP
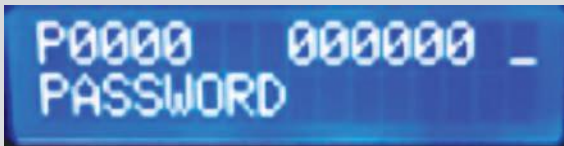
Move indicator to the right using right arrow button (►).

3. STEP

Enter correct password by using Up (▲) and Down (▼) buttons. Approve password by using Left arrow button (◄). You can proceed to parameter settings if password is correct .

```
P0000    000000 _
PASSWORD
```

If the password is not correct, wrong password will be displayed on screen. Repeat the steps from the beginning of step 2 until enter the correct password

4. STEP

P 1   Display Select .... 0 – 3 Display selection:
[0]   0 = Output Frequency (Hz)
1 = Motor current (A)
2 = DC bar voltage (V Dc)
3 = Device temperature (°C)

```
P0001_   000001
DISPLAY SELECT
```

Press P button and enter correct password. Afterwards change **P0000_** value to **P0001_** by pressing Up and Down buttons. Move the cursor to right by pressing Right button. You can set the parameter while device is in operating mode by using Up and Down buttons and set by pressing left button. After completing parameter set, Press Down button until reach to **P0** and leave parameter set mode by pressing **P** button.

P 2   Ramp Up Time 0-10,0
(Seconds)   [2,0]
This duration shows the time from total stop to maximum frequency set by parameter 6.
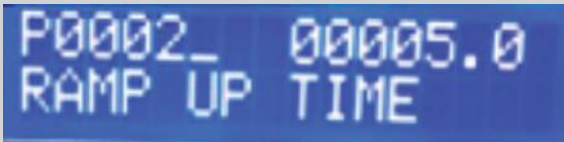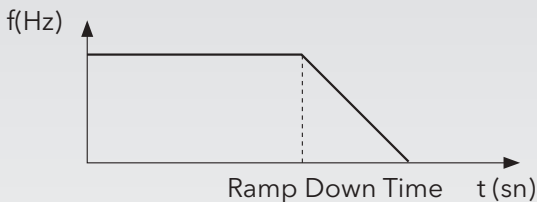
f(Hz)
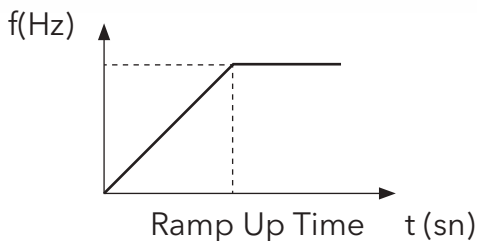
Ramp Up Time   t (sn)

```
P0002_  00005.0
RAMP UP TIME
```

Press P button and enter the correct password. Change **P0000_** value to **P0002_** by using Up and Down buttons. Move the cursor to right by using right button and increase or decrease the parameter value by using Up and Down buttons, set the parameter by using left button and leave parameter, after completing parameter set, Press Down button until reach to **P0** and leave parameter set mode by pressing **P** button.

P 3   Ramp Down Time 0-10,0
[2,0]
This time represents the duration from maximum frequency set by parameter 6 to total stop.

f(Hz)

Ramp Down Time   t (sn)

```
P0003_  00005.0
RAMP DOWN TIME
```

Press P button and enter the correct password. Change **P0000_** value to **P0003_** by using Up and Down buttons. Move the cursor to right by using right button and increase or decrease the parameter value by using Up and Down buttons, set the parameter by using left button, Press Down button until reach to **P0** and leave parameter set mode by pressing **P** button.

P 4 Manual Operation ....15,0 – 50,0
Start frequency (Hz)   [15,0]
Manual Operation start frequency value

```
P0004_  00025.0
START FREQUENCY
```

Press P button and enter the correct password. Change **P0000_** value to **P0004_** by using Up and Down buttons. Move the cursor to right by using right button and increase or decrease the parameter value by using Up and Down buttons, set the parameter by using left button, Press Down button until reach to **P0** and leave parameter set mode by pressing **P** button.

P 5   Operation Mode ....0 – 1
0 = Manual operation
1 = Automatic operation

```
P0005_    000001
AUTOMATIK
```

Press P button and enter the correct password. Change **P0000_** value to **P0005_** by using Up and Down buttons. Move the cursor to right by using right button and set operation mode Manual / Automatic by using Up and Down buttons, set the parameter by using left button, Press Down button until reach to **P0** and leave parameter set mode by pressing **P** button.

P6 Motor frequency (Hz) ....50.0 – 60.0
$$[50.0]$$
Enter the frequency value written on the motor label (Hz)

```
P0006_    000000
MOTOR FREQ 50 Hz
```

Press P button and enter the correct password. Change **P0000_** value to **P0006_** by using Up and Down buttons. Move the cursor to right by using right button and increase or decrease frequency value to the same value written on motor label by using Up and Down buttons, set the parameter by using left button, Press Down button until reach to **P0** and leave parameter set mode by pressing **P** button.

P 7   Motor Current .... 0 – 8
When the inverter works with a smaller capacity motor, this parameter should be set to motor label value.On other conditions, not necessary.

```
P0007_    00005.0
MOTOR CURRENT
```

Press P button and enter the correct password. Change **P0000_** value to **P0007_** by using Up and Down buttons. Move the cursor to right by using right button and increase or decrease current value to the same value written on motor label by using Up and Down buttons, set the parameter by using left button, Press Down button until reach to **P0** and leave parameter set mode by pressing **P** button.

P 8 Transmitter Pressure .... 0,1 – 100,0
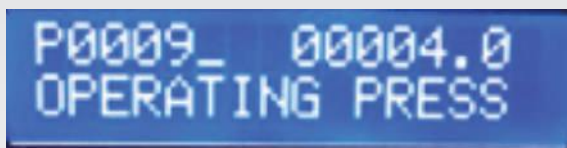**(Bar)**   [16,0]
Transmiitter in the system pressure value (bar)

```
P0008_   00016.0
TRANSMITTER PRES
```

Press P button and enter the correct password. Change **P0000_** value to **P0008_** by using Up and Down buttons. Move the cursor to right by using right button and adjust the maximum transmitter value same as the transmitter available on the system by using Up and Down, set the parameter by using left button, Press Down button until reach to **P0** and leave parameter set mode by pressing **P** button.

P 9   Operating Pressure .... 0,1 - 100,0
(Bar)   [3,0]

```
P0009_   00004.0
OPERATING PRESS
```

System operating pressure value (bar) in Automatic Mode, Differential pressure (Δp) in Circulation Systems. Press P button and enter the correct password. Change **P0000_** value to **P0009_** by using Up and Down buttons. Move the cursor to right by using right button and adjust the operating pressure value by using Up and Down buttons, set the parameter by using left button, Press Down button until reach to **P0** and leave parameter set mode by pressing **P** button.

P 10   Diff. Pressure .... 0,1 - 3,0
(Bar)   [0,5]
Hysteresis value of set pressure for operation and stop

```
P0010_   00000.5
DIFF PRESSURE
```

Press P button and enter the correct password. Change **P0000_** value to **P0010_** by using Up and Down buttons. Move the cursor to right by using right button and adjust the hysteresis value by using Up and Down buttons, set the parameter by using left button, Press Down button until reach to **P0** and leave parameter set mode by pressing **P** button.

P 11   Stop Delay .... 0,1 - 30,0 Sec)   [30,0]
Time delay to stop when the system reaches set pressure

```
P0011_   00010.0
STOP DELAY
```

Press P button and enter the correct password. Change **P0000_** value to **P0011_** by using Up and Down buttons. Move the cursor to right by using right button and adjust the stop delay value by using Up and Down buttons, set the parameter by using left button, Press Down button until reach to **P0** and leave parameter set mode by pressing **P** button.

P 12   Minimum motor .... 0 – 60,0 frequency (Hz)   [15,0]
Indicates minimum motor frequency value (Hz).

```
P0012_   00044.7
MIN MOTOR FREQ
```

Press P button and enter the correct password. Change **P0000_** value to **P0012_** by using Up and Down buttons. Move the cursor to right by using right button and adjust the motor minimum frequency value by using Up and Down buttons ,set the parameter by using left button, Press Down button until reach to **P0** and leave parameter set mode by pressing **P** button. (This frequency is calculated automatically in automatic operation mode.)

P 13 Maximum motor .... 0 – 60,0 frequency (Hz)   [50,0]
Indicates maximum frequency output of the inverter (Hz)

```
P0013_   00050.0
MAX MOTOR FREQ
```

Press P button and enter the correct password. Change **P0000_** value to **P0013_** by using Up and Down buttons. Move the cursor to right by using right button and adjust maximum frequency value by using Up and Down buttons, set the parameter by using left button, Press Down button until reach to **P0** and leave parameter set mode by pressing **P** button.

P 14 Factory Settings …………..……….. 0 – 1

```
P0014_   000000
FACTORY SETT   N
```

Press P button and enter the correct password. Change **P0000_** value to **P0014_** by using Up and Down buttons. Move the cursor to right by using right button and adjust the parameter by using Up and Down buttons **(Y)**. Set the parameter by using left button, Press down button until reach to **P0** and leave parameter set mode by pressing **P** button.

P 15 Automatic Pump Pressure ……….. 0 – 1
Maximum pump pressure is entered manually or inverter calculates this value in automatic mode by itself and saves.

```
P0015_   00005.0
PUMP PRESSURE
```

Press P button and enter the correct password. Change **P0000_** value to **P0015_** by using Up and Down buttons. Move the cursor to right by using right button and adjust maximum pump pressure value by using Up and Down buttons, set the parameter by using left button and leave parameter set mode by pressing **P** button or you can activate **P0018** parameter and inverter calculates this parameter automatically.

P 16 Operation according to motor.   1 – 2
                                         [2]

1) Normal operation
2) Pump operation

```
P0016_   000002
OPERATION PUMP
```

Press P button and enter the correct password. Change **P0000_** value to **P0016_** by using Up and Down buttons. Move the cursor to right by using right button and adjust the parameter by using Up and Down buttons (Pump). Set the parameter by using left button, Press Down button until reach to **P0** and leave parameter set mode by pressing **P** button.

P 17 Language Selection .... 0 – 1
                                                    [0]

1)Turkish
2)English

```
P0017_    000001
LANGUAGE ENGLISH
```

Press P button and enter the correct password. Change **P0000_** value to **P0017_** by using Up and Down buttons. Move the cursor to right by using right button and adjust the language setting by using Up and Down buttons. Set the parameter by using left button, Press down button until reach to **P0** and leave parameter set mode by pressing **P** button

P 18 Automatic test .... 0 – 1
                                                    [0]

Inverter runs motor and saves parameters automatically when this parameter is set to 1.

```
P0018_    000000
AUOTOMATIK SETT
```

Press P button and enter the correct password. Change **P0000_** value to **P0018_** by using Up and Down buttons. Move the cursor to right by using right button and adjust parameter to 1 Set the parameter by using left button, Press Down button until reach to **P0** and leave parameter set mode by pressing **P** button Inverter runs motor and sets pump parameters automatically.
Attention: Please set this parameter after closing the valve on discharge line (Expansion tank must not be available between valve and pump).

P 19 Slave inverter ....….............…. 0 – 60,0
Start delay time (Sec)   [5,0]
Start delay time for slave pumps on multiple inverter applications.

```
P0019_    00005.0
SLAVE DELAY ON
```

Press P button and enter the correct password. Change **P0000_** value to **P0019_** by using Up and Down buttons. Move the cursor to right by using right button and adjust parameter by using Up and Down buttons. Set the parameter by using left button, Press Down button until reach to **P0** and leave parameter set mode by pressing **P** button.

SETTING PARAMETERS

P 20 Slave inverter ……………..………… 0 – 60,0
Stop delay time (Sec)   [5,0]
Stop delay time for slave pumps on multiple inverter applications.

```
P0020_   00005.0
SLAVE DELAY OFF
```

Press P button and enter the correct password. Change **P0000_** value to **P0020_** by using Up and Down buttons. Move the cursor to right by using right button and adjust parameter by using Up and Down buttons. Set the parameter by using left button, Press Down button until reach to **P0** and leave parameter set mode by pressing **P** button.

P 21 Min frequency hysteresis ……….… 0-10,0
Frequency   [1,0]
Inverter minimum frequency value when the system reaches set pressure. Min frequency + Hysteresis

```
P0021_   00001.0
HYSTER OFF Hz
```

Press P button and enter the correct password. Change **P0000_** value to **P0021_** by using Up and Down buttons. Move the cursor to right by using right button and adjust hysteresis parameter by using Up and Down buttons. Set the parameter by using left button, Press Down button until reach to **P0** and leave parameter set mode by pressing P button.

P 22 Pump Type ………..……………………. 1 - 2
                                        [2]
1) Booster
2) Circulation

```
P0022_   000001
BUSTER PUMP
```

Press P button and enter the correct password. Change **P0000_** value to **P0022_** by using Up and Down buttons. Move the cursor to right by using right button and adjust pump type parameter by using Up and Down buttons. Set the parameter by using left button, Press down button until reach to **P0** and leave parameter set mode by pressing **P** button.

P 23 BMS Communication Address .... 1 - 255
[1]

Master inverter address is set by this parameter in Building Management Systems
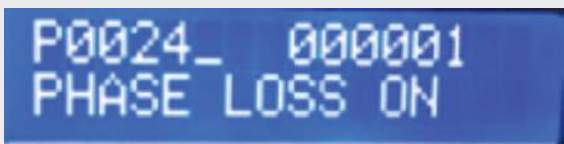
```
P0023_    000001
BMS COM ADDRESS
```

Press P button and enter the correct password. Change **P0000_** value to **P0023_** by using Up and Down buttons. Move the cursor to right by using right button and adjust building management system communication address parameter by using Up and Down buttons. Set the parameter by using left button, Press down button until reach to **P0** and leave parameter set mode by pressing **P** button.

P 24 Phase fault ……….....................…… 0 - 1
[1]

Phase protection is ON, in case there is phase loss on input, the inverter protects itself and motor and phase fault written on display

```
P0024_    000001
PHASE LOSS ON
```

Press P button and enter the correct password. Change **P0000_** value to **P0024_** by using Up and Down buttons. Move the cursor to right by using right button and adjust phase protection parameter by using Up and Down buttons. Set the parameter by using left button, Press down button until reach to **P0** and leave parameter set mode by pressing **P** button. Inverter can not protect itself and motor in case this protection is inactive.

P 25 Operating Hours (h)
Indicates inverter total operating hours information (just readable)

```
P0025_    000000
OPERAT HOURES   h
```

P 27 Total duration on power (h)
Indicates inverter total duration on power (just readable)

```
P0027_   000000
LINE CONNECT
```

P 29 Number of Start
Indicates inverter total number of start-Up information (just readable)

```
P0029_   000015
STARTS-UPS
```

P 31 Inverter Operation Condition......... 0-3
    0- Master
    1-Slave1
    2-Slave2
    3-Slave3

Press P button and enter the correct password. Change P0000_ value to P0031_ by using Up and Down buttons. Move the cursor to right by using right button and adjust master and slave selection parameter by using Up and Down buttons. Press down button until reach to P0 and leave parameter set mode by pressing P button.

```
P0031_   000000
MASTER
```

Inverter Operation Condition Indicator on Internal Communication Line

```
000   00.00 Bar
STOP   000.0 Hz
```
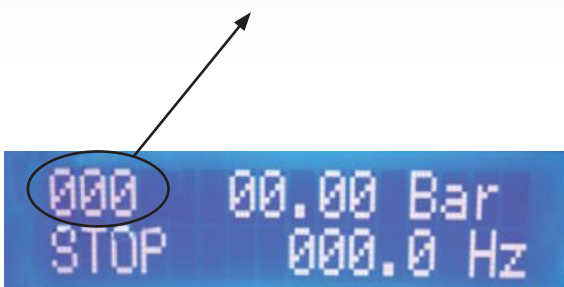
P 32 Lack of Water

This parameter used to protect the system aginst   lack of water. This parameter block the system if there is no increase of 0.1 bar in the pressure value during 99 seconds after the engine has started the system blocks itself.

```
P0032_   000001
LACK WATER ON
```

To disable this parameter; **Press P** button and enter the correct password. Change **P0000_** value to **P0032_** byusing Up and Down buttons. Move the cursor to right by using right button and set this parameter to 0 by using Down buttons. Set the parameter by using left button, Press down button until reach to **P0** and leave parameter set mode by pressing **P** button Inverter can not protect itself and motor in case this protection is inactive.

P33 Low Current Limit

This parameter used to protect the pump aginst   dry running.

```
P0033_   000040
LOW CURR LIM  %
```
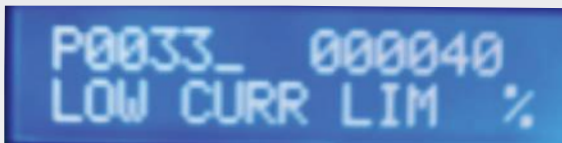
To change this parameter; **Press P** button and enter the correct password. Change **P0000_** value to **P0033_** byusing Up and Down buttons. Move the cursor to right by using right button and set this parameter to desigre percentege value by using Up or Down buttons. Set the parameter by using left button, Press down button until reach to **P0** and leave parameter set mode by pressing **P** button.

TROUBLESHOOTING TABLE

ERRORS	CAUSE	SOLUTION
Motor Short-Circuit	Motor terminals are not connected properly. Increase the start ramp (P2). Short circuit on motor terminals. Motor burst. Output module failed.	Check the motor connections. Check the motor cable. Check the motor. Send the inverter to the service.
Low Temperature	Inverter cooler temperature is lower than -10°C.	Wait for the inverter cooler temperature to exceed -10°C.
High Temperature	Inverter cooler temperature is higher than 85°C.	Inverter operating environment should not be higher than 50°C. Ventilate properly.
Overload	Motor current ran more than 60 seconds in 100-120% range.	Check pump stuck.
Overcurrent	Motor current exceeded 120% and didn't fall Down for 3 seconds.	Check pump stuck. Increase the start ramp (P2).
Low Voltage	Inverter sUpply voltage is 15% below the nominal voltage (Nominal voltage: 380V or 220V depending on the device model).	Ensure the inverter sUpply voltage is within the operating range.
High Voltage	Inverter sUpply voltage is 15% above the nominal voltage (Nominal voltage: 380V or 220V depending on the device model). Regeneration effect	Ensure the inverter sUpply voltage is within the operating range. Increase the inverter stop ramp (P3).
Phase Error	Valid for triphase devices. One of the phases is cut or below the operating values.	Check the inverter sUpply phases. Check inverter cables for any looseness.
Floater Error (No Water)	Floater connector contact is open.	Ensure there is enough water in the tank. Check the floater and connections.
Suction Sensor Error	Valid for circulation pumps. Suction sensor (Transmitter 2) connection is not detected by the inverter.	Check the Transmitter 2 connection. Terminals are reverse. Transmitter is broken.
Discharge Sensor Error	Discharge sensor (Transmitter 1) connection is not detected by the inverter.	Check the Transmitter 1 connection. Terminals are reverse. Transmitter 1 is broken. Send the inverter to the service.
Insufficient Capacity	Pump capacity is not enough.	Check the pump capacity. Check P9 and P15. If the value of P9 is larger than the value of P15, then capacity warning is triggered.
Installation Leak	There is a leak in the inverter installation.	Check the installation. Initial operation of the system while there is no water. Reset the system and rerun.

Communication System   = RS485
Communication protocol = MODBUS   8 NONE 1   ASCII
Communication speeed   = 9600 Baud
Communication distance = 1000 meter

ADDRESS (Hex)	EXPLANATION	PARAMETER
0x1100	System Pressure	400 (4 Bar)
0x2000	Master Inverter connected to System	1 = Connected 0 = Not connected
0x2001	Master Inverter Operation	1 = Operating 0 = Not operating
0x2002	Master Inverter Frequency (Hz).	500 (i.e.)
0x2003	Master Inverter Fault.	10,20,21,24,25,26,27,28,30,40,50,60,61,62
0x2004	Master Inverter Operating hours	1250 (i.e.)
0x2005	Master Inverter Operating days	650(i.e.)
0x2010	Slave_1 Inverter connected to System	1 = Connected 0 = Not connected
0x2011	Slave_1 Inverter Operation.	1 = Operating 0 = Not operating
0x2012	Slave_1 Inverter Frequency (Hz).	500 (i.e.)
0x2013	Slave_1 Inverter Fault.	10,20,21,24,25,26,27,28,30,40,50,60,61,62
0x2014	Slave_1 Inverter Operating hours.	1250 (i.e.)
0x2015	Slave_1 Inverter Operating days.	650 (i.e.)
0x2020	Slave_2 Inverter connected to System	1 = Connected 0 = Not connected
0x2021	Slave_2 Inverter Operation.	1 = Operating 0 = Not operating
0x2022	Slave_2 Inverter Frequency (Hz).	500 (i.e.)
0x2023	Slave_2 Inverter Fault.	10,20,21,24,25,26,27,28,30,40,50,60,61,62
0x2024	Slave_2 Inverter Operating hours.	1250 (i.e.)
0x2025	Slave_2 Inverter Operating days.	650 (i.e.)
0x2030	Slave_3 Inverter connected to System	1 = Connected 0 = Not connected
0x2031	Slave_3 Inverter Operation.	1 = Operating 0 = Not operating
0x2032	Slave_3 Inverter Frequency (Hz).	500 (i.e.)
0x2033	Slave_3 Inverter Fault.	10,20,21,24,25,26,27,28,30,40,50,60,61,62
0x2034	Slave_3 Inverter Operating hours.	1250 (i.e.)
0x2035	Slave_3 Inverter Operating days.	650 (i.e.)

These display codes can only be seen on Master inverter

INDICATOR CODE	EXPLANATION
1 1 1	All inverters are set as Master, (Faulty parameter set, only one inverter can be set as Master)
100	Only Slave1 Enabled
020	Only Slave2 Enabled
004	Only Slave3 Enabled
120	Slave1 and Slave2 Enabled
104	Slave1 and Slave3 Enabled
024	Slave2 and Slave3 Enabled
124	Slave1, Slave2 and Slave3 Enabled
000	Only MASTER Enabled

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Fault Codes

10 = Motor Short Circult
20 = Low Voltage
21 = Faz Fault (for three phase inverters)
24 = Insufficient Capacity
25 = Water Leakage
26 = Output Sensor Fault
27 = Suction Sensor Fault
28 = Floater Fault (No water)
30 = High Voltage
40 = Over Current
50 = Overload
60 = Temperature Fault
61 = High Temperature Fault
62 = Low Temperature Fault

THREE PHASE INVERTERS							
Input Voltage Range	AC 380 V +/- % 20						
Motor output power	**1,1 kW**	**1,5 kW**	**2,2 kW**	**3 kW**	**4 kW**	**5,5 kW**	**7,5 kW**
Continuous Output	2,22 kVA	2,91 VA	4,10 kVA	5,36 kVA	7,26 kVA	9,31 kVA	12,6 kVA
Output Current (nominal)(A)	2,8	3,7	5,2	6,8	9,2	11,8	17
Output Current (max. continuous) (A)	3,08	4,07	5,72	7,48	10,12	12,98	18,5
Input current (A)	3,7	4,9	5,9	10	12,5	16	25
Recommended Input Fuse (A)	10		16		20		32
Recommended Cable Diameter (mm²)	Input	1,5			2,5			4
	Output	1,5				2,5		4
Dimensions (mm) (w x l x d)	200 X 200 X 127						
Weight (kg)	2,5						

NOTES

NOTES

Rev. 02/2022

ETNA®

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