INSTRUCTIONS FOR INSTALLATION AND MAINTENANCE

PANEL MODELS

EEG 0.55T2^S - EE2G 1,1T2^S- EE3G 1,65T2^S
EEG 0,75T2^S - EE2G 1,5T2^S - EE3G 2,25T2^S
EEG 1.1T2^S - EE2G 2,2T2^S - EE3G 3,3T2^S
EEG 1,5T2^S - EE2G 3T2^S - EE3G 4,5T2^S
EEG 2,2T2^S - EE2G 4,4T2^S - EE3G 6,6T2^S
EEG 3T2^S - EE2G 6T2^S - EE3G 9T2^S
EEG 4T2^S - EE2G 8T2^S - EE3G 12T2^S
EEG 5.5T2^S - EE2G 11T2^S - EE3G 16,5T2^S
EEG 7.5T2^S - EE2G 15T2^S - EE3G22,5T2^S
EEG 11T2^S - EE2G 22TSD2^S - EE3G 33TSD2^S
EEG 15T2^S - EE2G 30TSD2^S - EE3G 45TSD2^S
EEG18,5T2^S -EE2G 37TSD2^S -EE3G55,5TSD2^S
EEG 22T2^S - EE2G 44TSD2^S - EE3G 66TSD2^S
EEG 30T2^S - EE2G 60TSD2^S - EE3G 90TSD2^S

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1.   INTRODUCTION

This documentation provides general indications for the storage, installation and use of the electric panels listed in this handbook. The devices have been designed and made to control and protect centrifugal surface electric pumps installed in pressure booster sets with one, two and three pumps for domestic and industrial applications.

2.   MAGAZZINAGGIO

A long period of inactivity in precarious storage conditions may cause damage to the equipment and thus cause risk to the personnel in charge of installation, control and maintenance.
First of all it is good practice to ensure that the control panel is correctly stored, scrupulously observing the following indications:
- the set must be kept in a completely dry place, far from sources of heat;
- electric panel must be perfectly closed and insulated from the outside environment, so as to prevent insects, damp and dust from getting in and damaging the electric components, to the detriment of their regular operation.

3.   TRANSPORT

Avoid subjecting the products to needless jolts or collisions.

4.   DIMENSIONS AND WEIGHTS

The adhesive label on the package indicates the total weight of the set. The overall dimensions of the set are shown in the attached documents.

5.   WARNINGS

5.1 ⚠ **Read this documentation carefully before installation.**
It is indispensable to have the electric system and connections made by skilled personnel, in possession of the technical qualifications indicated by the safety standards concerning the design, installation and maintenance of technical plants, in force in the country where the product is to be installed.

Failure to comply with the safety regulations not only causes risk to personal safety and damage to the equipment, but invalidates every right to assistance under guarantee.

5.2 ⚠ The term **skilled personnel** means persons whose training, experience and instruction, as well as their knowledge of the respective standards and requirements for accident prevention and working conditions, have been approved by the person in charge of plant safety, authorising them to perform all the necessary activities, during which they are able to recognise and avoid all dangers. (Definition for technical personnel IEC 364)

5.3 ⚠ Check that no damage has been done to the panel and set during transport or storage. In particular, ensure that the external casing is perfectly entire and in excellent condition; all the internal parts of the panel (components, leads, etc.) must be completely free from traces of damp, oxide or dirt. Clean carefully and check the efficiency of all the components in the panel; if necessary, replace any parts that are not perfectly efficient It is indispensable to ensure that all the leads in the panel are correctly secured to their terminals. In the event of long storage (or in the event of replacement of any part) it is advisable to carry out on the panel all the tests indicated by standards EN 60204-1.

6. RESPONSIBILITY

The Manufacturer does not ensure good operation of the panel if it is tampered with or modified or made to operate at values beyond the data on the plate.
The Manufacturer also declines all responsibility for possible errors in this booklet, if due to misprints or errors incopying. The company reserves the right to make any modifications to products that it may consider necessary or useful, without affecting the essential characteristics.

7. INSTALLATION

⚠ Carefully observe the power supply values specified on the rating plate.

The electrical panel is supplied pre-assembled and wired to the pumpset. The electrical panel must be installed on a dry surface, in an atmosphere that is free from oxidizing or corrosive gases, and where no vibrations occur. If installed outdoor, the units must be fully protected from direct sunlight. **Make sure that the ambient temperature is kept within the operating limits specified below.** High temperatures lead to rapid ageing of all the components, causing more or less severe malfunctions.
It is also advisable for the person who installs the panels to ensure that the cable clamps are watertight.
Use the cable clamp gripping rings provided to block the cables (power supply to the panel) and the cables of any external controls connected by the installer), so as to prevent the cable clamps from working loose.

8. TECHNICAL DATA

- Rated input voltage : 400 V +/- 10%
- Phases : 3
- frequency : 50-60 Hz
- number of pumps that can be connected :

1 for models:
EEG0,55T2^S – EEG0,75T2^S – EEG1,1T2^S – EEG1,5T2^S – EEG2,2T2^S EEG3T2^S - EEG4T2^S – EEG5,5T2^S – EEG7,5T2^S – EEG11T2^S EEG15T2^S – EEG18,5T2^S – EEG22T2^S – EEG30T2^S.

2 for models:
EE2G1,1T2^S – EE2G1,5T2^S – EE2G2,2T2^S – EE2G3T2^S - EE2G4,4T2^S EE2G6T2^S - EE2G8T2^S – EE2G11T2^S – EE2G15T2^S - EE2G22TSD2^S EE2G30TSD2^S – EE2G37TSD2^S – EE2G44TSD2^S – EE2G60TSD2^S.

3 for models:
EE3G1,65T2^S – EE3G2,25T2^S – EE3G3,3T2^S – EE3G4,5T2^S EE3G6,6T2^S – EE3G9T2^S - EE3G12T2^S – EE3G16,5T2^S EE3G22,5T2^S - EE3G33TSD2^S – EE3G45TSD2^S – EE3G55,5TSD2^S EE3G66TSD2^S - EE3G90TSD2^S.

Panel models:	**EEGO,55T2^S**	**EEG0,75T2^S**	**EEG1,1T2^S**	**EEG1,5T2^S**	**EEG2,2T2^S**	**EEG3T2^S**
	EE2G1,1T2^S	EE2G1,5T2^S	EE2G2,2T2^S	EE2G3T2^S	EE2G4,4T2^S	EE2G6T2^S
	EE3G1,65T2^S	EE3G2,25T2^S	EE3G3,3T2^S	EE3G4,5T2^S	EE3G6,6T2^S	EE3G9T2^S
Max. rated output power (kW):	0,55	O,75	1,1	1,5	2,2	3
	2x0,55	2x0,75	2x1,1	2x1,5	2x2,2	2x3
	3x0,55	3x0,75	3x1,1	3x1,5	3x2,2	3x3
Max. rated using current (A):	1,7	2,1	3	3,5	5	7
	2x1,7	2x2,1	2x3	2x3,5	2x5	2x7
	3x1,7	3x2,1	3x3	3x3,5	3x5	3x7

– Panel model:	**EEG4T2^S** EE2G8T2^S EE3G12T2^S	**EEG5,5T 2^S** EE2G11T2^S EE3G16,5T2^S	**EEG7,5T 2^S** EE2G15T 2^S EE3G22,5T 2^S	**EEG11T2^S** EE2G22TSD2^S EE3G33TSD2^S	**EEG15T2^S** EE2G30TSD 2^S EE3G45TSD2^S	**EEG18,5T2^S** EE2G37TSD2^S EE3G55,5TSD2^S
– max. rated output power (kW):	4 2x4 3x4	5,5 2x5,5 3x5,5	7,5 2x7,5 3x7,5	11 2x11 3x11	15 2x15 3x15	18,5 2x18,5 3x18,5
– max. rated using current (A):	9 2x9 3x9	12 2x12 3x12	15 2x15 3x15	22 2x22 3x22	30 2x30 3x30	34 2x34 3x34

– Panel model:	**EEG22T2^S** EEG22TSD2^S EE3G66TSD2^S	EEG30T2^S EE2G60TSD2^S EE3G90TSD2^S
– max. rated output power (kW):	22 2x22 3x22	30 2x30 3x30
– max. rated using current (A):	42 2x42 3x42	58 2x58 3x58

– field of use environment temperature: -10°C + 40°C
– storage environment temp. limit: -25°C +55°C
– Relative humidity (without condensation): 50% at 40°C MAX (90% at 20°C).
– max. altitude: 2500 m (a.s.l.)
– Degree of protection: **IP55,** for models with inverter power up to **3 kW**
IP 54, for models with inverter power from: **4, 5.5 and 7,5 kW**.
IP44, for models with inverter power from: 11 kW and higher powers.
– Panel construction: In accordance with EN 60204-1, EN 60439-1, EMC standards applied: EN50081-1 EN50082-2 for civil use and for light industry.

8.1 Characteristics and interpretation of the wiring diagram references..

The panels are self-protected and protect the electric pumps against **overloads, short circuits, overtemperatures and phase failure, with manual reset.**
They are designed for MAN-0-AUT operation for each electric pump.
They are designed for operation in the following two modes:
Constant pressure, controlled by the Hydrocontroller unit and inverter with automatic changeover of the starting order of all the electric pumps.
Emergency, AUTOMATIC operation with pressure switches in case of inverter failure.
For 11 kW and higher powers, electromechanical star/delta starters are provided.
The operating status of each electric pump is signalled on the front panel, while the system pressure, alarms and operating hours of each pump are displayed on the Hydrocontroller unit.
Terminals are provided for remote signalling of alarms and motor maintenance, and an RS 485 output for system control and supervision on a Personal Computer.

Rif.	Function (references on the enclosed wiring diagrams)	
HL1	White indicator light, signals the correct operation of the auxiliary circuits	⇒
HL2	Red indicator light, it comes on to signal the following generic alarms: 1=Motor maintenance. 2=Set parameters error. 4=Sensor malfunction. 8= Motor overload. 16= inverter alarm. 32=Overpressure alarm (automatic reset 5" delay). H2O?= Minimum pressure(automatic reset). 64=Minimum pressure (manual reset).	⇒
HL3	Green indicator light, signals power supply to the P1 electric pump.	⇒
HL4	Green indicator light, signals power supply to the P2 electric pump.	⇒
HL5	Green indicator light, signals power supply to the P3 electric pump.	⇒

HL6	Red indicator light comes on when the amperometric protection of the P1 electric pump is triggered ⇒
HL7	Red indicator light comes on when the amperometric protection of the P2 electric pump is triggered ⇒
HL8	Red indicator light comes on when the amperometric protection of the P3 electric pump is triggered⇒

ALARM

SA1-	
SA2 -	Switches for MANUAL/AUTOMATIC operation.
SA3 -	

– MANUAL		= electropump P1 or P2 manually controlled by the operator as long as the impulse lasts.
- 0		Electropump switch OFF.
– AUTOMATIC		= electropump P1 and/or P2 and/or P3 controlled directly by module HYDROCONTROLLER and/or pressure switch.

SA4 Selector for system operation with PRESSURE SWITCH - **0** - HYDROCONTROLLER

- **PRESSURE SWITCH**	= electropumps P1 and/or P2 and/or P3 controlled directly by the pressure switches.
- **0**	= system stopped and consent for programming of the control unit HYDROCONTROLLER (the message STOP appears on the display).
- **HYDRO CONTROL LER**	= system at constant pressure controlled by the HYDROCONTROLLER control unit and by the inverter.

QM1-RT1	Automatic magnetothermal switch, for protection of the P1 motor supply line against overloads and short circuits, with manual reset.
QM2-RT2	Automatic magnetothermal switch, for protection of the P2 motor supply line against overloads and short circuits, with manual reset.
QM3-RT3	Automatic magnetothermal switch, for protection of the P3 motor supply line against overloads and short circuits, with manual reset.
	Set the automatic magnetothermal switches QM1-RT1 and/or QM2-RT2, QM3-RT3 following the indication of current absorbed in the electrical data plate.
FU1	Fuses for protecting the inverter against short-circuits from:

16 A gG 10x38	20 A gG 10x38	25 A gG 10x38	32 A gG 10x38	63 A Gg NH OO	80 A gG NHOO	100 A gG NHOO
EEGO,55T2^S, EE2G1,1T2^S, EE3G1,65T2^S,EEG0,75T2^S, EE2G1,5T2^S, EE3G2,25T2^S EEG1,1T2^S, EE2G2,2T2^S, EE3G3,3T2^S, EEG1,5T2^S EE2G3T2^S, EE3G4,5T2^S EEG2,2T^2, EE2G4,4T2^S EE3G6,6T2^S, EEG3T2^S, EE2G6T2^S, EE3G9T2^S,	EEG4T2^S, EE2G8T2^S, EE3G12T2^S	EEG5,5T2^S, EE2G11T2^S, EE3G16,5T2^S,	EEG7,5T2^S, EE2G15T2^S EE3G22,5T2^S	EEG11T2^S, EE2G22TSD2^S, EE3G33TSD2^S EEG15T2^S EE2G30TSD2^S EE3G45TSD2^S	EEG22T2^S EE2G44TSD2^S EE3G66TSD2^S EEG30T2^S EE2G60TSD2^S EE3G90TSD2^S	

⚠️ **Intervention inhibits the functions of the pump fed by the inverter but not of the system.**
Disconnect the power before maintenance.

FU2 Fuses for protecting the transformer against short-circuits of the primary circuit and of its supply
(1A gG 10x38 or 2 A gG 10x38).

⚠️ **Intervention inhibits all the panel functions and switches off indication HL1.**

FU3 Fuses for protecting the transformer against short-circuits of the secondary circuit (4A) and (6.3, A) for control panels fitted with star-delta starters..

⚠️ **Intervention inhibits all the panel functions and switches off indication HL1.**

FU.S. Spare fuses for: FU1 (A: see table of fuses for FU1), FU2 (1A), and FU3 (4 or 6.3 A).

QS1	Supply line insulating switch with door locking handle which may be padlocked.
PR.TR. **1 – 2- 3**	Terminals for connection of the PR.TR. pressure transmitter for control of system pressure through the HYDROCONTROLLER unit and the inverter. Input characteristics: 15 V d.c. 4-:-20 mA.
P.S.1 **4 -5**	Cables connected to the PS1 pressure switch for control of the P2 electric pump Input characteristics: 24 V a.c. 0.5 A.
P.S.2 **6 - 7**	Cables connected to the PS2 pressure switch for control of the P3 electric pump Input characteristics: 24 V a.c. 0.5 A.
P.MIN **8 - 9**	Connection terminals for the P.MIN. minimum pressure switch. When using them, remove the by-pass provided as a standard feature between terminals no. 8 ande no. 9. Input characterstics: 24 V a.c. 0.04 A .
ALARM **10 - 11**	Terminals for remote signalling of control panel alarms: - Inverter alarm. - Motor overload. - Water failure or minimum pressure. - Overpressure. - Sensor malfunction. Contact characteristics: (N.O. contact 5 A 250 V).
MOTOR MAN. **12 -13**	Terminals for remote signalling of required motor maintenance. Contact characteristics: (N.O. contact 5 A 250 V).
Out RS 485 **16-17-18**	RS 485 output to be used with the suitable software to be installed on P.C..(optional)

⚠ **External controls do not require connection to**

⏚ **they are connected to the PELV safety circuit (CEI EN 60204-1).**

U-V-W (P1)	⚠ Connection leads for the electropump P1 **Scrupulously respect the required correspondence and make a good earth connection for the screen of the screened cable.**
U-V-W (P2)	⚠ Connection leads for the electropump P2. **Scrupulously respect the required correspondence and make a good earth connection for the screen of the screened cable.**
U-V-W (P3)	⚠ Connection leads for the electropump P3. **Scrupulously respect the required correspondence and make a good earth connection for the screen of the screened cable.**
KL1	**HYDROCONTROLLER electronic unit** for command and control of the system with constant pressure and of the inverter (see paragraph 8.3).

8.2   Set operation

8.2.1   **Set operation based on constant pressure;** KL1 electronic control unit powered
(SA4 selector switches set to HYDROCONTROLLER, SA1, SA2 and/or SA3 aut. position)
The KL1 control unit provides for operation of the set as follows:

– Starting and control of the **GF1** inverter, with automatic changeover of the starting order of all the electric pumps.
– Control and powering of the remaining electric pumps through: contactors.
– 2x16 character LCD display of system pressure and parameters, to be established in table 8.2.5.
– Electric pumps protection, with signalling in alarm list and remote signals for:
-   Water failure,
-   overpressure,
-   lack of signal from pressure transmitter,
-   motor overload,
-   inverter overload.
  Automatic switching to pressure switch control in the event of inverter failure, faulty sensor or malfunction of the KL1 control unit. **In order to exclude the automatic commutation, remove the connection from clip 1 of KL1 like. See you the adhesive nameplate.**
– Control of the operating hours of each electric pump, with remote signalling of maintenance requirements.
– Automatic shutdown of the pump powered by the inverter, **after one minute** that the flow rate has dropped to zero liters/min.
– Automatic restarting with a reference pressure reduced by 0.5 bar, to avoid too frequent start-ups.

8.2.2 Modes and parameters to be established on the KL1 control unit.

The control unit features four programming keys:

- ⊛ ENTER key to confirm the modified data.

- ◀ SHIFT key to select the figure to be modified.

- ▲ INCREASE key to increase the number to be modified or go to the upper parameter line.

- ▼ DECREASE key to decrease the number to be modified or go to the lower parameter line.

To access the programming mode proceed as follows:

⇒ Turn the **SA4** selector switch to ***** (**the system stops),** if SA4 is set to the HYDROCONTROLLER position, the control unit signals SYSTEM RUNNING.

⇒ The display shows the main page.

⇒ Strike the ▼ DECREASE key until you reach the bottom parameter line, the following message will appear: "**enter key**".

⇒ Strike the ◀ SHIFT key**;** the 0 on the right will start flashing; modify the parameter using the ▲ INCREASE key until you reach 9, then strike the ◀ SHIFT key, the 0 to the left of the number you have just modified will start flashing.

⇒ Strike the ◀ SHIFT key until you reach the fifth figure, then modify with number 1 using the ▲ INCREASE key.

⇒ Enter the number 1009 then strike ⊛ ENTER key: appears the message **"Serv. access key"** will appear in the top string, while the number **10009** will appear in the bottom string.

⇒ If you have entered a wrong password, the control unit signals WRONG PASSWORD.

⇒ Strike the ▼ DECREASE key, the message: Language 1: ENGLISH will appear on the display.

⇒ Strike the ▼ DECREASE key to view and modify the parameters dedicated to SERVICE DAB (see table 8.2.5).

Set pressure — Instantaneous pressure — Increase button

N. of pumps running

% inverter pumps speed

Number pump fed from inverter

P.Set00.0   P00.0
NP0 Vel%00 INV:0

HYDROCONTROLLER

Confirm button — Decrease button — Shift button
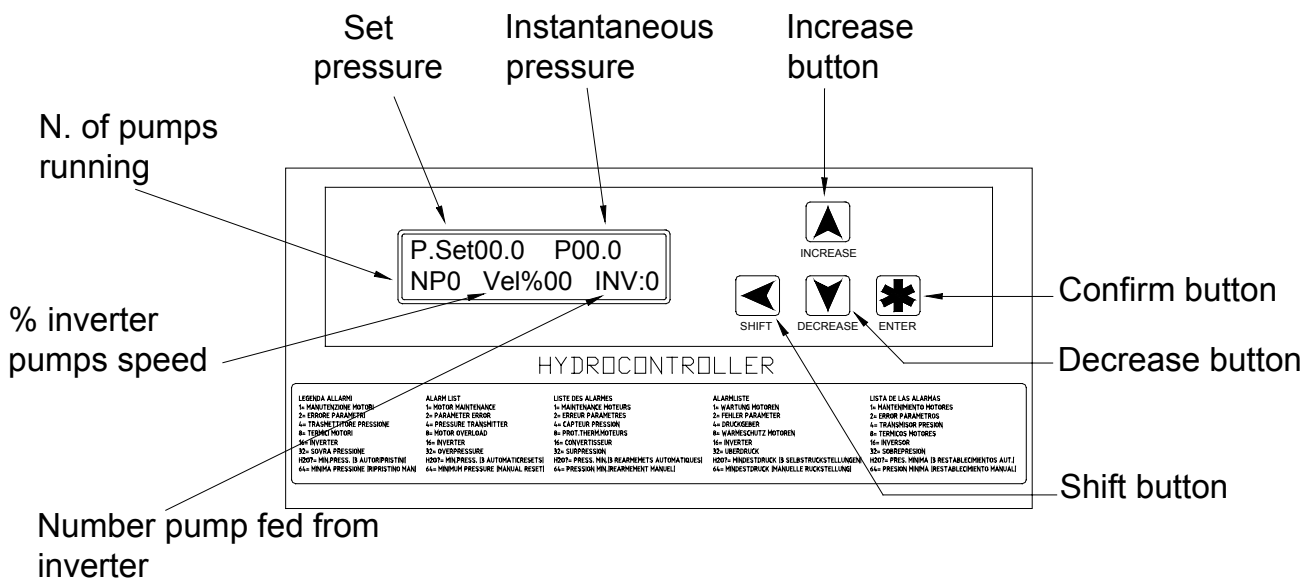
8.2.3 Page parameter table, always displayed in the KL1 control unit

PSET 00,0 P 00,0 **NP0 Vel%00 A000**	Main page displays: **PSET**= Pressure setting. **P**= instantaneous system pressure. **NP**0= Number of pumps running. **Vel%**= Speed % of pump powered by the inverter. **A**= pumpset ampere consumption.
Q.: 0(L/M) **QT**: 000(L)	**Q**= instantaneous flow \. **QT**= flow totalization.
KW: 0.0 **kWh**: 0.0	**KW**= instantaneous pumpset power consumption. **KWh**= Totalization of pumpset power consumption.
P1h: 0 MAN OFF **P2h**: 0 MANOFF	**P1h OFF** =pump operating hours not reached, P1h ON =pump operating hours reached. **P2h OFF** =pump operating hours not reached, P2h ON =pump operating hours reached. <u>Extendable to up to eight pumps.</u>
P3h: 0 MAN OFF **P4h:** 0 MANOFF	**P3h OFF** =pump operating hours not reached, P3h ON =pump operating hours reached. **P4h OFF** =pump operating hours not reached, P4h ON =pump operating hours reached. <u>Extendable to up to eight pumps.</u>
Software vers. **DAB 16.003.000.2**	Software personalized for DAB.

8.2.4 Table of alarms displayed on the KL1 control unit

ALARM LIST	DESCRIPTION
1= MOTOR MAINTENANCE	It appears when the hours established in the P maint. parameter have been exceeded.
2= PARAMETER ERROR	It appears when the set Pressure is higher than the transducer's full scale.
4= TRANSDUCER	It appears when there is no signal from the transducer
8= MOTOR OVERLOAD	It appears when the motor overload protections are triggered.
16= INVERTER	It appears when the inverter shuts down.
32= OVERPRESSURE	It appears when the safe pressure is exceeded.
H2O? MINIMUM PRESSURE (THREE AUTOMATIC RESETS)	It appears when the pressure drops to minimum; software control from the control unit with three automatic attempts to reset the protection and shut-down at the fourth attempt, with manual reset. The protection triggering time is one minute. The first three times that the protection is triggered, the message "H2O?" appears on the display, the fourth time the message "64" appears.
64= MINIMUM PRESSURE (MANUAL RESET)	Triggering of minimum pressure switch or float switch, connected to terminals 11 – 12.
WARNING: the inverter, faulty sensor, control unit malfunction alarms cause the automatic starting of the system with pressure switches. **The message "MOTOR MAINTENANCE alarm 1" is cancelled by moving the cursor to** <img_decrease> **and selecting, at the bottom of table 8.2.3, the motor that is scheduled for maintenance, then selecting ON using the** <img_shift> **key and striking the** <img_enter> **key.**	

8.2.5 Table of parameters dedicated to SERIVICE DAB to be established in the KL1 control unit.

Parameter	Description	Range	Value	Meas. unit	Set UP electrotech	SetUP Service
Enter key 0	Enter the SERVICE DAB key	0-:-99999	10009	unit	-	10009
Language 1: ENGLISH	Languages in which the parameters are written (Italian, English, French, German, Spanish). Italian, English, French, German, Spanish. 0 1 2 3 4	0-:-4 language		language	Englisth	English
Flow Res. Comp. 0,0 (bar)	Flow resistance compensation for sequential pump start-up.	0,0-:-1	0,0-:-1	Bar	0	0
Nom. Pump press.	Nominal pressure of pump at 0 litres.	0.00-:-	1.0-:-25.5	bar		

00,0 (bar)			25,5			
Reference Press. 00,0 (bar)	System pressure to be kept constant.	0.00-:-25,5	0.0-:-25.5	bar		
Correction KP 100	Proportional correction of error between the system pressure and the Reference Pressure.	0-:-250	0-:-250		50	50
Correction KI 100	Correction in time of error between the system pressure and the Reference Pressure.	0-:-250	0-:-250		50	50
Min. speed % 60	Inverter's minimum speed level setting for stop cascade pumps control .	0.00-:-60%	0-:-100%	%V.Max	60	60
Pump Start Delay 00 (sec)	Delay in start-up of pumps following the first one	0-:-99 Sec.	0-:-20	Sec.	2	2
Danger Press. 00,0 (bar)	Pressure setting at which the control unit goes into overpressure alarm mode.	**0-:-100%**	**0-:-100%**	**%**	**+80%di P.riferim**	**+80% P.riferim**
Min.Press. H2O 0.0 (BAR)	Pressure value to be set based on the pressure in the delivery circuit. The factory setting is 0.5 bar.	0,00-:-1	0,00-:-1	Bar	0,5	0,5
P1 maint. 00000	Pump Maintenance set Time P1 maint. step-in, P2 maint. step-in, P3 maint. step-in, P4 maint. step-in, Extension: P5 maint. step-in, P6 maint. step-in – P7 maint. step-in, P8 maint. step-in	0-:-99999	0-:-99999	ore	10.000	10.000
P1 oper. Hours 00000	P1 pump operating hours	0-:-99999		hour		0-:-99999
P2 oper. Hours 00000	P2 pump operating hours	0-:-99999		hour		0-:-99999

8.3 How to set the parameters listed in table 8.2.5 in the KL1 control unit.

- **REFERENCE P.:** reference pressure to be kept constant in the system.
- **Head P.:** pressure value to be set based on the pressure in the suction manifold.
- **Const.KP:** conventional value representing the **capacity** of reducing the error between the **Reference P.** and the **Instantaneous System P**. during normal operation. **Warning!** If the set value is too high, it will cause oscillations. If the set value is 0 no error correction is made, if the set value is 255 the error will be corrected instantaneously.
- **Const. KI**.: conventional value representing the **rapidity** with which the error between the **Reference P.** and the **Instantaneous System P**. is annulled. **Warning**! If the set value is too high it will cause oscillations. If the set value is 0 no error correction is made, if the set value is 255 the error will be corrected instantaneously.
- **P.Incr.Delay:** time delay before start-up or stopping of the pumps after the first; value to be set at 0-:-20 seconds;the recommended value is max 2 sec.
- **Danger P.** : maximum pressure setting allowed in the system, above which the control unit immediately disconnects all the pumps. **Warning!** The control unit will signal an overpressure error if the set value is incorrect.
- **Flow Res. Comp.:** value to be set at 0-:-1 bar in order to increase the system pressure so as to compensate for increased flow resistence.
- When the programming has been completed, set the **SA4** selector switch to **HYDROCONTROLLER** mode**,** the following parameters should appear on the display:
  a. **P00.0 :** reference pressure,
  b. **p00.0 :** instantaneous system pressure,
  c. **NP0** : number of powered pumps,
  d. **f00.0 :** speed % of the max speed of the pump powered by the inverter,
  e. **A 0.0.0**: total current absorbed by the system (optional).

8.4 Parameters to be read in the inverter GF1.

The inverter is provided with a control panel for programming and with a LED display.
All the motor operation, control and protection parameters are set by DAB.
As standard, the parameter indicated on the display is the frequency at which the motor is fed. Any alarms signalled through the **HL2** red indicator light and on the KL1 control unit **alarm 16** can be read on the inverter's display and be identified by referring to Chap. 9 point B.
WARNING: the inverter, faulty sensor, control unit malfunction alarms cause the automatic starting of the system with the pressure switches.
The operation of reading the display to see what type of alarm has tripped must be carried out with the door open **(THIS OPERATION MUST BE CARRIED OUT ONLY BE EXPERT PERSONNEL).**
ATTENTION: The reading of the reference number of the type of alarm that has tripped remains on the display for only 10 seconds from the moment in which the insulating switch **QS1** moves to position **0**; after 10 seconds the inverter automatically restarts the motor and the indication of the type of alarm is removed.
The inverter is programmed to restart automatically every 10 seconds three times, restoring the pre-alarm

situation; the fourth time it trips, the inverter blocks the power supply to the motor and indicates the type of alarm on the display.
For any interventions or modifications, apply to the DAB SERVICE.

8.5 Set operation with pressure switches

Electronic control unit KL1 fed only to display the pressure (selectors SA4 in PRESSURE SWITCH position, SA1, SA2 and/or d SA3 in Aut. position.
The control prepares set operation as follows:
- Control and command (by the pressure switches) of the pumps P2 and/or P3 by means of the remote control switches and/or star-delta starters **KM2** and/or **KM3** by the supply mains;
- Indication and blocking of the pumps in the event of tripping.
− Indication and blocking of the pumps in the event of minimum pressure or lack of water.

8.6 Remote alarms connections.

The control panel provides for the possibility of remotizing the alarms triggered as a result of inverter failure, motor overload, water failure, overpressure.
Two additional terminals signal any motor maintenance requirements.
The optional software to be installed on the PC can be supplied on request, and the system can be controlled through the RS 485 connection supplied as standard.

8.7 Electrical connections

8.7.1 Before connecting the power cables to terminals L1 - L2 - L3 on the insulating switch, ensure that the main switch on the power distribution panel is in OFF position (O), and that no one can switch on the power accidentally.

8.7.2 Scrupulously observe all the regulations in force concerning safety and accident prevention.

8.7.3 ⚠ Ensure that all the terminals are fully tightened, **paying particular attention to the earth terminal.**

8.7.4 Connect the cables to the terminal board as indicated in the wiring diagrams given in the enclosed booklet.

8.7.5 Check that all the connecting cables are in excellent condition, with the external sheathing unbroken.

8.7.6 ⚠ **ATTENTION ! In the system, install differential switches type:**
Class A, with adjustable dispersion current: 300 mA, selective, protected
against sudden tripping, delay time 0.5 seconds.
Provide automatic protection of the supply line against short circuits by means of ACR fuses type
_gG" according to the following table:

8.7.7 ⚠ **The apparatus must be correctly and safely earthed as required by the regulations in force.**

8.7.8 Depending on the type of installation, limit the maximum length of the power cable as follows:

Panel model	Max. line lenght Cable 1.5 mm°	Max. line lenght Cable 2.5 mm°	Max. line lenght Cable 4 mm°	Max. line lenght Cable 6 mm°	Max. line lenght Cable 10 mm°	Max. line lenght Cable 16 mm°
EEGO,55T2^S, EE2G1,1T2^S, EE3G1,65T2^S,EEG0,75T2^S, EE2G1,5T2^S, EE3G2,25T2^S	100	180	230			
EEG1,1T2^S, EE2G2,2T2^S, EE3G3,3T2^S, EEG1,5T2^S EE2G3T2^S, EE3G4,5T2^S	60	100	130			
EEG2,2T2^S, EE2G4,4T2^S EE3G6,6T2^S, EEG3T2^S, EE2G6T2^S, EE3G9T2^S,	30	50	80			
EEG4T2^S, EE2G8T2^S, EE3G12T2^S,	20	35	50			
EEG5,5T2^S, EE2G11T2^S,EE3G16,5T2^S, EEG7,5T2^S, EE2G15T2^S EE3G22,5T2^S			40	60	100	
EEG11T2^S, EE2G22T2^S, EE3G33TSD2^S			25	40	60	
EEG15T2^S, EE2G30TSD2^S EE3G45TSD2^S				30	50	70
EEG22T2^S,EE2G44TSD2^S EE3G66TSD2^S,EEG30T2^S EE2G60TSD2^S, EE3G90TSD2^S				15	25	30

8.7.9 **Instrumental checks to be carried out by the installer:**
  a) continuity of the protection leads and of the main and supplementary equipotential circuits;
  b) insulation resistance of the electric system;
  c) test efficiency of the differential protection;
  d) test the applied voltage;
  e) test operation.

9   Troubleshooting

FAULTS	CHECK (POSSIBLE CAUSES)	REMEDY

1. The motor P1 is not fed.	A. The selector (ref. SA4) is not in Hydrocontroller position.
	
	B. The inverter (ref. GF1) is protected and the signal (ref. HL4) indicates is due to:
	  a. **Warning/Alarm 4**: Phase failure.
	  b. **Waring /Alarm 8:** Undervoltage.
	  c. **Warning/Alarm 9**: Overload.
	
	  d. **Warning/alarm 10**: Motor overheating.
	  e. **Warning/Alarm 12**: Current limit.
	
	  f. **Warning/Alarm 13**: Overcurrent.
	
	  g. **Alarm 14**: Earth failure.
	  h. **Alarm15**: Switching mode failure.
	  i. **Alarme 16**: Short circuit.
	
	  j. **Alarm 30**: Phase U of the motor missing.
	  k. **Alarme 31**: PhaseV of the motor missing.
	  l. **Alarm 32**: PhaseW of the motor missing.
	  m. **Warning/Alarm 36/29**: Overtemperature.
	
	  n. **Alarme 15 or 37**: inverter failure.
		A. Turn the selector S4A to Hydrocontroller position.
		
		B. Feed the panel and read the inverter display:
		
		  a. Check the fuses FU1.
		  b. Check the supply voltage.
		  c. The thermal protection of the inverter has tripped.
		Check motor absorption and environment Temperature.
		
		  d. Check motor absorption.
		  e. The motor absorption exceeds the limit set in the inverter (perform motor maintenance).
		f. The peak current limit set in the inverter has been exceeded. Motor mechanically blocked.
		
		g. Perform maintenance on the motor cable.
		  h. Contact the SERVICE.
		i. Short circuits in the motor phases, perform maintenance on the cable.
		j. Check the connection or the motor.
		  k. Check the connection or the motor.
		  l. Check the connection or the motor.
		m. The overtemperature in the inverter is excessive.
		  - High environment temperature,
		  - Motor cable too long,,
		  - High mains voltage.
		Contact the SERVICE.

2. The motors P2 and/or P3 are not fed.	A. Tripping of the magnetothermal switch of (ref.QM1 and/or QM2) or the automatic differential switch of the distribution panel. B. No voltage on the terminals L1-L2-L3 C. Tripping of the protection fuses FU2 and/or FU3 and the signal (ref. HL1) is off. D. The remote control switch ref. KM1 or KM2 and/or KM3 is vibrating.	A. Check the insulation of the electropump cables. Reset the magnetothermal switch inside the panel (ref.QM1-QM2) or the differential switch on the distribution panel. B. Check the panel connection cables and any switches or insulating switches that may have tripped in the system. C. IIdentify any short circuits and replace the fuses that have tripped. If the fault persists, call the SERVICE. D. The supply voltage is insufficient..
3. The protection ref. <u>inverter</u> GF1 or QM1, RT1 or QM2, RT2 QM3, RT3 or intervenes.	A. P1 or P2 or P3 pump impeller blocked.	A. Carry out maintenance to free the impeller.
4. The pump P1 or P2 and/or P3 continues delivering and does not respond to external commands.	A. The pressure switches are not correctly connected to the control panel. B. The pressure switch and/or transducer are faulty and the control unit signals **FAULTY SENSOR**. C. The remote control switch KM1 or KM2 and/or KM3 is faulty (contacts are stuck). D. HYDROCONTROLLER control unit is faulty	A. Correctly connect the pressure switches and check operation of the system B. Check the connections or replace the elements. C. Change the part(s). D. Replace the control unit.

	E. HYDROCONTROLLER control unit displays parameter FAULT.	E. Check the setting of the parameter **D. Pressure**, replace the control unit.
5. The control unit signals one of the following alarms.	A. Signal 1 = Motor maintenance. B. Signal 2 = Parameter error. C. Signal 4 = Faulty sensor. D. Signal 8= Motor overload protections. E. Signal 16= Inverter alarm. F. Signal 32= Overpressure G. Signal 64= minimum pressure alarm H. H2O? message = minimum pressure SOFTWARE alarm for the first three step-ins. I. Display switched off or wrong parameter signals.	A. The hours established in the parameter (pump maintenance) have been reached: perform the required pump maintenance. B. Wrong settings in the control unit due to: Reference P. higher than Sensor Pressure. Head P. higher than Ref. Pressure. Danger P. lower that Ref. Pressure. C. No signal from the pressure Transmitter D. The motor protections have triggered, carry out required motor or pump maintenance. E. The inverter has shut down due to one of the causes listed at point 1. F. The system does not respond to the signals of the control unit or pressure switches. G. No water on suction side or pressure switch malfunction. I. Control unit malfunction. **WARNING! the system operates automatically with the pressure switches.**

10   List of spare parts

EEG 0.55T2^S - EE2G 1,1T2^S - EE3G1,65 T2^S

REF	Code	Description	Model
QM1e/oQM2	002773377	MAGNETOTHERMAL SWITCH 1/1,6A	GZ1-M06 TELEMECANIQUE MS116 1-1,6 ABB
KM1-: -KM6	002773460	REMOTE CONTROL SWITCH 4 KW 400V AC3 24V 50/60Hz	LC1D0910 B7 TELEMECANIQUE A8 301024VAV50-60HZ ABB
TC1	002771243	AUXILIARI TRANSFORMER 0-230-400/24 70VA	DAB
KL1		ELECTRONIC PANEL HYDROCONTROLLER KL1 COD. 82.014.00.1	DAB
XL	002776140	EMC FILTER 16 A COD 80.001.00	DAB
GF1	002776100	INVERTER 0,55 KW 400V COD. 195N1003	DAB

EEG 0,75T^S – EE2G 1,5 T2^S - EE3G2,25 T2^S

REF	Code	Description	Model
QM1e/oQM2	002773378	MAGNETOTHERMAL SWITCH 1.6/2.5A	GV2-M07 TELEMECANIQUE MS116 1,6-2,5 ABB
KM1-: -KM6	002773460	REMOTE CONTROL SWITCH 4 KW 400V AC3 24V 50/60Hz	LC1 0910 B7 TELEMECANIQUE A8 301024VAV50-60HZ ABB
TC1	002771243	AUXILIARI TRANSFORMER 0-230-400/24 70VA	DAB
KL1		ELECTRONIC PANEL HYDROCONTROLLER KL1 COD. 82.014.00.1	DAB
XL	002776140	EMC FILTER 16 A COD 80.001.00	DAB
GF1	002776101	INVERTER 0,75 KW 400V COD. 195N1015	DAB

EEG 1,1T2^S - EE2G2,2 T2^S - EE3G3,3T2^S

REF	Code	Description	Model
QM1 e/oQM2	002773379	MAGNETOTHERMAL SWITCH 2,5/4A	GV2-M08 TELEMECANIQUE MS116 2,5-4 ABB
KM1-: -KM6	002773460	REMOTE CONTROL SWITCH 4 KW 400V AC3 24V 50/60Hz	LC1 0910 B7 TELEMECANIQUE A8 301024VAV50-60HZ ABB
TC1	002771243	AUXILIARI TRANSFORMER 0-230-400/24 70VA	DAB
KL1		ELECTRONIC PANEL HYDROCONTROLLER KL1 COD. 82.014.00.1	DAB
XL	002776140	EMC FILTER 16 A COD 80.001.00	DAB
GF1	002776102	INVERTER 1,1 KW 400V COD. 195N1027	DAB

EEG1,5T2^S - EE2G3 T2^S EE3G4,5 T2^S

REF	Code	Description	Model
QM1 e/oQM2	002773379	MAGNETOTHERMAL SWITCH 2,5/4A	GV2-M08 TELEMECANIQUE MS116 2,5-4 ABB
KM1-: -KM6	002773460	REMOTE CONTROL SWITCH 4 KW 400V AC3 24V 50/60Hz	LC1 0910 B7 TELEMECANIQUE A8 301024VAV50-60HZ ABB
TC1	002771243	AUXILIARI TRANSFORMER 0-230-400/24 70VA	DAB
KL1		ELECTRONIC PANEL HYDROCONTROLLER KL1 COD. 82.014.00.1	DAB
XL	002776140	EMC FILTER 16 A COD 80.001.00	DAB
GF1	002776103	INVERTER 1.5 KW 400V COD. 195N1039	DAB

EEG 2,2T2^S - EE2G 4,4T2^S - EE 3G 6,6T2^S

REF	Code	Description	Model
QM1 e/oQM2	002773380	MAGNETOTHERMAL SWITCH 4/ 6,3 A	GV2-M10 TELEMECANIQUE MS116 4-6,3 ABB
KM1-: -KM6	002773460	REMOTE CONTROL SWITCH 4 KW 400V AC3 24V 50/60Hz	LC1 0910 B7 TELEMECANIQUE A8 301024VAV50-60HZ ABB
TC1	002771243	AUXILIARI TRANSFORMER 0-230-400/24 70VA	
KL1		ELECTRONIC PANEL HYDROCONTROLLER KL1 COD. 82.014.00.1	DAB
XL	002776140	EMC FILTER 16 A COD 80.001.00	DAB
GF1	002776104	INVERTER 2.2 KW 400V COD. 195N1051	DAB

EEG 3T^2 - EE2G 6T-^2 EE3G9 T^2

REF	Code	Description	Model
QM2 E/oQM3	002773380	MAGNETOTHERMAL SWITCH 4/ 6,3 A	GV2-M10 TELEMECANIQUE MS116 4-6,3 ABB
KM1-: -KM6	002773460	REMOTE CONTROL SWITCH 4 KW 400V AC3 24V 50/60Hz	LC1 0910 B7 TELEMECANIQUE A8 301024VAV50-60HZ ABB
TC1	002771243	AUXILIARI TRANSFORMER 0-230-400/24 70VA	DAB
KL1		ELECTRONIC PANEL HYDROCONTROLLER KL1 COD. 82.014.00.1	DAB
XL	002776140	FILTER EMC 16 A COD 80.001.00	DAB
GF1	002776105	INVERTER 3 KW 400V COD. 195N1063	DAB

EEG 4T2^S - E2G8 T2^S - E3G12 T2^S

REF	Code	Description	Model
QM2 E/oQM3	002773381	MAGNETOTHERMAL SWITCH 6.3/10 A	GV2-M14 TELEMECANIQUE MS116 6-10 ABB
KM1-: -KM6	002773460	REMOTE CONTROL SWITCH 4 KW 400V AC3 24V 50/60Hz	LC1 0910 B7 TELEMECANIQUE A8 301024VAV50-60HZ ABB
TC1	002771243	AUXILIARI TRANSFORMER 0-230-400/24 70VA	DAB
KL1		ELECTRONIC PANEL HYDROCONTROLLER KL1 COD. 82.014.00.1	DAB
XL	002776140	FILTER EMC 16 A COD 80.001.00	DAB
GF1	002776106	INVERTER 4 KW 400V COD. 195N1087	DAB

EEG 5,5T2^S, EE2G 11T2^S, EE3G 16,5T2^S.

REF	Code	Description	Model
QM2 E/oQM3	002773382	MAGNETOTHERMAL SWITCH 10/14 A	GV2-M16TELEMECANIQUE MS116 10-14 ABB
KM1-: -KM6	002773462	REMOTE CONTROL SWITCH 5,5 KW 400V AC3 24V 50/60Hz	LC1 12 10 B7 TELEMECANIQUE A9 301024VAV50-60HZ ABB
TC1	002776150	AUXILIARI TRANSFORMER 0-230-400/24 100VA	DAB
KL1		ELECTRONIC PANEL HYDROCONTROLLER KL1 COD. 82.014.00.1	DAB
XL	002776140	EMC FILTER 16 A COD 80.001.00	DAB
GF1	002776107	INVERTER 5,5 KW 400V COD. 195N1099	DAB

EEG 7,5T2^S, EE2G 15T2^S, EE3G 22,5T2^S.

REF	Code	Description	Model
QM1 E/oQM2		MAGNETOTHERMAL SWITCH 13/18 A	GV2-M20 TELEMECANIQUE MS325 14-20 ABB
KM1-: -KM6		REMOTE CONTROL SWITCH 7.5 KW 400V AC3 24V 50/60HZ	LC1 1810 B7 TELEMECANIQUE A16 301024VAV50-60HZ ABB
TC1	002776150	AUXILIARI TRANSFORMER 0-230-400/24 70VA	DAB
KL1		ELECTRONIC PANEL HYDROCONTROLLER KL1 COD. 82.014.00.1	DAB
XL	002776140	EMC FILTER 16 A COD 80.001.00	DAB
GF1	002776108	INVERTER 7,5 KW 400V COD. 175Z7010	DAB

EEG 11T2^S, EE2G 22TSD2^S, EE3G 33TSD2^S

REF	Code	Description	Model
QM1,QM2,QM3		MAGNETOTHERMAL SWITCH 20-25 A	GV2-M22 TELEMECANIQUE MS325 20-25 ABB
KM1,KM6,KM11		REMOTE CONTROL SWITCH 7,5 KW 400V AC3 24V 50/60Hz	LC1 D18 B7 TELEMECANIQUE A16 301024VAV50-60HZ ABB
KM2,KM7,KM12 KM1x EEG11T		REMOTE CONTROL SWITCH 11 KW 400V AC3 24V 50/60Hz	LC1D2510 B7 TELEMECANIQUE A26 301024VAV50-60HZ ABB
KM3,KM4,KM8 KM9,KM13,KM14		REMOTE CONTROL SWITCH 5,5 KW 400V AC3 24V 50/60Hz	LC1 D12 B7 TELEMECANIQUE A11 301024VAV50-60HZ ABB
KM5,KM10,KM15		REMOTE CONTROL SWITCH 4 KW 400V AC3 24V 50/60Hz	LC1 D9 B7 TELEMECANIQUE A8 301024VAV50-60HZ ABB
TC1		AUXILIARI TRANSFORMER 0-230-400/24 150VA	DAB
KL1		ELECTRONIC PANEL HYDROCONTROLLER KL1 COD. 82.014.00.1	DAB
GF1		INVERTER 11 KW 400V VLT 2880	DAB

EEG 15T2^S, EE2G 30T-SD2^S, EE3G 45T-SD2^S.

REF	Code	Description	Model
KM1,KM6,KM11		REMOTE CONTROL SWITCH 11 KW 400V AC3 24V 50/60Hz	LC1 D225 B7 TELEMECANIQUE A26 301024VAV50-60HZ ABB
KM2,KM7,KM12 KM1 xEEG15T		REMOTE CONTROL SWITCH 15KW 400V AC3 24V 50/60Hz	LC1D3210 B7 TELEMECANIQUE A30 301024VAV50-60HZ ABB
KM3,KM4,KM8 KM9,KM13,KM14		REMOTE CONTROL SWITCH 7,5 KW 400V AC3 24V 50/60Hz	LC1 D18 B7 TELEMECANIQUE A16 301024VAV50-60HZ ABB
KM5,KM10,KM15		REMOTE CONTROL SWITCH 4 KW 400V AC3 24V 50/60Hz	LC1 D9 B7 TELEMECANIQUE A8 301024VAV50-60HZ ABB
RT1,RT2,RT3		THERMAL RELE' 16-.-24 A	LRD22 TELEMECANIQUE TA 25 DU ABB
TC1		AUXILIARI TRANSFORMER MONOFASE 0-230-400/24 250VA	DAB
KL1		ELECTRONIC PANEL HYDROCONTROLLER KL1 COD. 82.014.00.1	DAB
GF1		INVERTER 11 KW 400V COD. VLT2881	DAB

EEG 18,5T2^S, EE2G 37T-SD2^S, EE3G 55,5TSD2^S.

REF	Code	Description	Model
KM1,KM6,KM11		REMOTE CONTROL SWITCH 15 KW 400V AC3 24V 50/60Hz	LC1 D32B7 TELEMECANIQUE A30 301024VAV50-60HZ ABB
KM2,KM7,KM12 KM1 xEEG18,5T		REMOTE CONTROL SWITCH 18,5 KW 400V AC3 24V 50/60Hz	LC1D3810 B7 TELEMECANIQUE A40 301024VAV50-60HZ ABB
KM3,KM4,KM8 KM9,KM13,KM14		REMOTE CONTROL SWITCH 7,5 KW 400V AC3 24V 50/60Hz	LC1 D18 B7 TELEMECANIQUE A16 301024VAV50-60HZ ABB
KM5 KM10 KM15		REMOTE CONTROL SWITCH 4 KW 400V AC3 24V 50/60Hz	LC1 D8 B7 TELEMECANIQUE A8 301024VAV50-60HZ ABB
RT1 RT2		THERMAL RELE' 23-: -32 A	LRD32 TELEMECANIQUE TA25DU 23-32 ABB

RT3			
TC1		AUXILIARI TRANSFROMER 0-230-400/24 250VA	DAB
KL1		ELECTRONIC PANEL HYDROCONTROLLER KL1 COD. 82.014.00.1	DAB
GF1		INVERTER 11 KW 400V COD. VLT2882	DAB

EEG 22T2^S, EE2G 44TSD2^S, EE3G 66TSSD2^S.

REF	Code	Description	Model
KM1,KM6,KM11		REMOTE CONTROL SWITCH 15 KW 400V AC3 24V 50/60Hz	LC1 D32 B7 TELEMECANIQUE A30 301024VAV50-60HZ ABB
KM2,KM7,KM12 KM1 xEEG22T		REMOTE CONTROL SWITCH 22 KW 400V AC3 24V 50/60Hz	LC1 D50 B7 TELEMECANIQUE A50 301024VAV50-60HZ ABB
KM3,KM4,KM8 KM9,KM13,KM14		REMOTE CONTROL SWITCH 15 KW 400V AC3 24V 50/60Hz	LC1 D32 B7 TELEMECANIQUE A30301024VAV50-60HZ ABB
KM5,KM10,KM15		REMOTE CONTROL SWITCH 7,5 KW 400V AC3 24V 50/60Hz	LC1 D18 B7 TELEMECANIQUE A16 301024VAV50-60HZ ABB
RT1,RT2,RT3		THERMAL RELE' 23-: -32	LRD32 TA25DU 23-32 ABB
TC1		AUXILIARI TRANSFROMER 0-230-400/24 300VA	DAB
KL1		ELECTRONIC PANEL HYDROCONTROLLER KL1 COD. 82.014.00.1	DAB
GF1		INVERTER 22 KW 400V VLT 6032 COD. 175Z7032	DAB

EEG 30T2^S, EE2G 60TSD2^S, EE3G 90TSD2^S.

REF	Code	Description	Model
KM1,KM6,KM11		REMOTE CONTROL SWITCH 18,5 KW 400V AC3 24V 50/60Hz	LC1 D38 B7 TELEMECANIQUE A40301024VAV50-60HZ ABB
KM2,KM7,KM12 KM1 xEEG30T		REMOTE CONTROL SWITCH 30 KW 400V AC3 24V 50/60Hz	LC1 D65 B7 TELEMECANIQUE A63 301024VAV50-60HZ ABB
KM3,KM4,KM8 KM9,KM13,KM14		REMOTE CONTROL SWITCH 18,5 KW 400V AC3 24V 50/60Hz	LC1 D40 B7 TELEMECANIQUE A40301024VAV50-60HZ ABB
KM5,KM10,KM15		REMOTE CONTROL SWITCH 11 KW 400V AC3 24V 50/60Hz	LC1 D25 B7 TELEMECANIQUE A26 301024VAV50-60HZ ABB
RT1,RT2,RT3		THERMAL RELE' 30-: -40 A	LRD3355 TA42 DU 42 ABB
TC1		AUXILIARI TRANSFORMER 0-230-400/24 500VA	DAB
KL1		ELECTRONIC PANEL HYDROCONTROLLER KL1 COD. 82.014.00.1	DAB
GF1		INVERTER 30 KW 400V VLT 6042 COD.175Z7033	DAB

11   Table of parameters to be established in the KL1 control unit, dedicated to DAB technicians.

Parameter	Description	Range	Value	Meas. unit	Set UP Electrotech	SetUP Service
Enter key 0	Enter key	0-: -99999	00000	unit	-	10009
Language 1: ENGLISH	**Languages in which the parameters are written** (Italian, English, French, German, Spanish). Italian, English, French, German, Spanish. 0 1 2 3 4	0-: -4 languages		language	English	English
Type of system 1 : Inverter fixed 2 : exchange inv. 3 : Cont.2-:-8Inv 4: circolatori	l Inverter fixed on pump. 2 **One** inverter exchanged on all the pumps. 3 Analogue control inverter 2-:-8. 4 Circulatin	1, 2,3,4	1-:-4	n°	2	2
RS485 address	Data to be set for multi-inverter panels with serial communication. Control unit address = 00	00	00	N°	**00**	**00**

Type of sensor 1: RELATIVE P. 2: DIFFER. P.	1 Relative pressure transmitter. 2 Differential pressure transmitter or use second pressure sensor Input.	1,2	1-:-.2	N°	1	1
Reg, type 1: negative 2: positive.	1 negative feedback = for submerged pump pressurisation systems . 2 positive feedback = for refrigeration systems	1,2	1-:-2	N°	2	**2**
Type of control 1 : ANALOGUE 2: SERIAL	1 : Analogue. 2 : Serial.	1,2	1-:-2	N°	1	1
Number of Pumps 0:-:4	Selection of number of system pumps. Extendable to up to eight pumps.	1-:-4 (8)	1-:-4	n°	1-:-4	1-:-4
Sensor Press. 00,0 (bar)	Full scale pressure of Pressure Transmitter.	00-:-99	00-:-99	Bar	6,10, 16, 25	
Flow res. comp. 0,0-:-1	Flow resistance compensation for sequential pump start-up.	0,0-:-1	0,0-:-1	Bar	0	0
Nom. Pump press. 00,0 (bar)	Nominal pressure of pump at 0 litres.	0.00-:-25,5	1.0-:-25.5	bar		
Reference P. 00,0 (bar)	System pressure to be kept constant.	0.00-:-25,5	0.0-:-25.5	bar		
Proportional limit 0,0 (bar)	Pressure range within which the control unit does not correct the pressure.	0.0-:-9.9	0.0-:-0,9	Bar	0.2	0,2
Restart press. 0,0 (bar)	Pressure at which the inverter starts up again.	0.0-:-9.9	0.1-.-3,0	Bar	0.5	0,5
Correction KP 100	Proportional correction of error between the system pressure and the Reference Pressure.	0-:-250	0-:-250		50	50
Correction KI 100	Correction in time of error between the system pressure and the Reference Pressure.	0-:-250	0-:-250		50	50
Acceleration 001 (sec)	Inverter start-up time from Min speed to Max speed.	0 -:200	0-:-255	Sec.	100	1
Deceleration 001 (sec)	Inverter stop time from Max speed to Min speed.	0-:-200	0-:-255	secondi	100	1
Vel Min.RedPer % 85	Inverter's minimum speed level setting for stop inverter pumps control .	0.00-:-100%	0-:-100%	%Vmax		90
Min. speed % 60	Inverter's minimum speed level setting for stop cascade pumps control .	0.00-:-100%	0-:-100%	%Vmax		60
Periodic reduction 0,00 (bar)	Reduction of reference pressure to stop the pump with the inverter.	0.00-:-5	0,0-:-5	Bar	0.3	0,3
Per. Red. Interv. 00 (sec)	Delay in reduction of reference pressure to stop the pump with the inverter.	0-:-99 Sec.		Sec.	60	60
Pump stop delay 000 (sec)	Stop delay of the pumps following the first inverter supply.	0-:-999 Sec.	0-:-20	Sec.	**2**	**5**
Pump startup delay 00 (sec)	Delay in start-up of pumps following the first one	0-:-99 Sec.	0-:-20	Sec.	2	2
Danger Press. 00,0 (bar)	Pressure setting at which the control unit goes into overpressure alarm mode.	**0-:-100%**	**0-:-100%**	**%**	**+80% P.riferim**	**+80% P.riferim**
Trans. Delay time 00 (%)	Update delay of the transmitter signal. Setting 00 = minimum update delay of the transmitter signal. Setting 100 = maximum update delay of the transmitter signal.	0-:-100%	0-:-100%	%	00	00
Min.press.H2O 0,0 (BAR)	Pressure value to be set based on the pressure in the delivery circuit. The factory setting is 0.5 bar.	0,00-:-1	0,00-:-1	Bar	0,5	0,5
Pump rot. Interr. 00	Time of daily changeover of the starting order of the pumps, with the following settings: 0 = no changeover. 1 to 24 changeover based on set hour. 25= changeover at each new start-up.	0-:-25	0-:-25	hours	25	25
Flow unit meas. 0 : (UnitMeas.)	Selection of unit of measurement for the flow meter L/sec, L/min, M3h, G/s, G/m.					

F.s.flow sensor 0000	Selection of flow meter full scale.					
Calibr. factor TA 00,0 0	Coefficient for calibration of amperometric transformer.	0-:-99	0-:-99	N°		
Calibr. factor TV 00,0 0	Coefficient for calibration of voltmetric transformer.	0-:-99	0-:-99	N°		
P1 maint 00000	Pump maintenance set time, P1 maint. step-in, P2 maint. step-in, P3 maint. step-in, P4 maint. step-in, Extension: P5 maint. step-in, P6 maint. step-in – P7 maint. step-in, P8	0-:-99999	0-:-99999	ore	0-:-10000	0-:-10000
P1 oper. hours 00000	P1 pump operating hours	0-:-99999		hours		0-:-99999
P2 oper. hours 00000	P2 pump operating hours	0-:-99999		hours		0-:-99999

12   TABLE OF PARAMETERS ESTABLISHED IN GF1 SERIES

PROGRAMMING OF INVERTERS MOUNTED ON PANELS MOD. : **EEG0,55T2^S - EE2G 1,1T2^S – EE3G 1,65T2^S, EEG 0,75T2^S- EE2G 1,5T2^S – EE3G 2,25T2^S, EEG 1,1T2^S - EE2G 2,2T2^S – EE3G 3,3T2^S,   EEG 1,5T2^S - EE2G3T2^S - EE3G4,5T2^S, EEG 2,2T2^S - EE2G 4,4T2^S - EE3G 6,6T2^S, EEG 3T2^S - EE2G 6T2^S – EE3G,9T2^S, EEG4T2^S - EE2G 8T2^S - EE3G12T2^S, EEG 5.5T2^S -EE2G 11T2^S,- EE3G 16,5T2^S, EEG 7.5T2^S - EE2G 15T2^S - EE3G 22.5T2^S, EEG11T2^S - EE2G22TSD2^S – EE3G33TSD2^S, EEG15T2^S – EE2G30TSD2^S – EE3G45TSD2^S , EEG18,5T2^S – EE2G37TSD2^S – EE3G55,5TSD2^S.
INVERTER TIPO***:**

N.PARAM.	DESC. PARAM.	SETUP
001	**LANGUAGE**	
004	ACTIVE SETUP	1
014	LOCAL STOP	0
101	TORQUE CARAT.	7
* 102	**MOTOR POWER**	
* 103	**MOTOR VOLTAGE**	
* 104	**MOTOR FREQUENCY**	
* 105	**MOTOR CURRENT**	
* 106	**MOTOR NOM. SPEED**	
107	**AUTO MOTOR TUN.**	2
119	**TIME CURRENT LIM.**	0,5
128	**MOTOR THERM. PROTEC.**	4
205	MAX. REFERENCE	50.5
207	RAMP UP TIME.	1,5
208	RAMP DOWN TIME	2
212	RAMP DOWN TIME	0,02
213	JOG FREQUENCY	50
221	CURRENT LIMIT INVERTER	1.5xImot. (Param.105)
225	FREQUENCY LOW	1
310	AL. 53 MAX. VAL.	9.95
323	RELE' 01 FUNCT	10
341	DIG. OUT.	11
405	RESET MODE	AUTO x3
406	AUTORESTART (S)	10 sec.
411	COMMUTATION FREQ.	8 K-HZ
413	OVERMODULATION	0
	TYPE OF PUMP	

*=PARAMETERS TO BE SET, DEPENDING ON THE TYPE OF PUMP:

13   **TABLE OF PARAMETERS ESTABLISHED IN GF1 SERIES 6000**

PROGRAMMING OF INVERTERS MOUNTED ON PANELS MOD.: **EEG22T2^S – EE2G44TSD2^S – EE3G66TSD2^S – EEG30T2^S – EE2G60TSD2^S – EE3G90TSD2^S.**

INVERTER TIPO: _____

N.PARAM.	DESC. PARAM.	SETUP 1
001	**LANGUAGE**	
002	ACTIUAL SETUP	1
* 102	**MOTOR POWER**	
* 103	**MOTOR VOLTAGE**	
* 104	**MOTOR FREQUENCY**	
* 105	**MOTOR CURRENT**	
*106	**MOTOR NOM. SPEED**	
* 107	**AUTO MOTOR ADAPT.**	ENABLED
117	**PROT. TERM. MOT.**	4
201	MIN. FREQUENCY	0
202	MAX. FREQUENCY	50,5
205	MAX. REFERENCE	50.5
206	RAMP UP TIME	1,5
207	RAMP DOWN TIME.	2
209	JOG FREQUENCY	50
215	CURRENT LIMIT INVERTER	I.VLT.x1.1 (Param105x1.5)
222	HIGH CURRENT	I.LIM per 0.5 sec.
223	LOW FREQUENCY	0
224	HIGH FREQUENCY	1
310	AL. 53 MAX. VAL.	9.95
323	RELAY 01 FUNCT.	ALLARME
326	RELAY 02 FUNCT.	F OUT > F.HIGT
400	RESET FUNCT.	AUTO x3
401	AUTORESTART (S)	10 sec.
407	COMMUTATION FREQ.	8 K-HZ
412	OVERLOAD DELAY	60 sec.
	TYPE OF PUMP	

*= PARAMETERS TO BE SET, DEPENDING ON THE TYPE OF PUMP