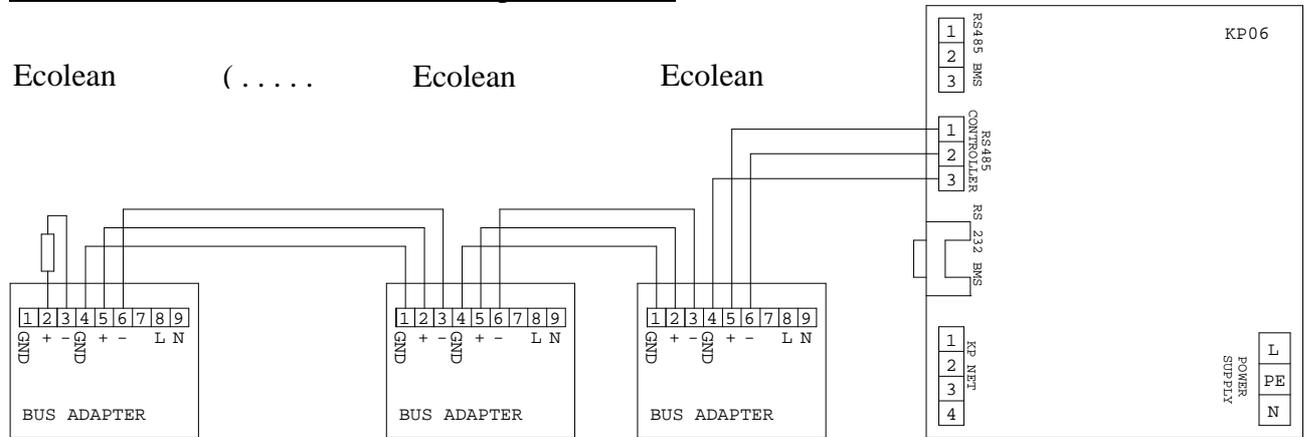




BMS/ GTS KP06 Interface

Installation and start up Document.

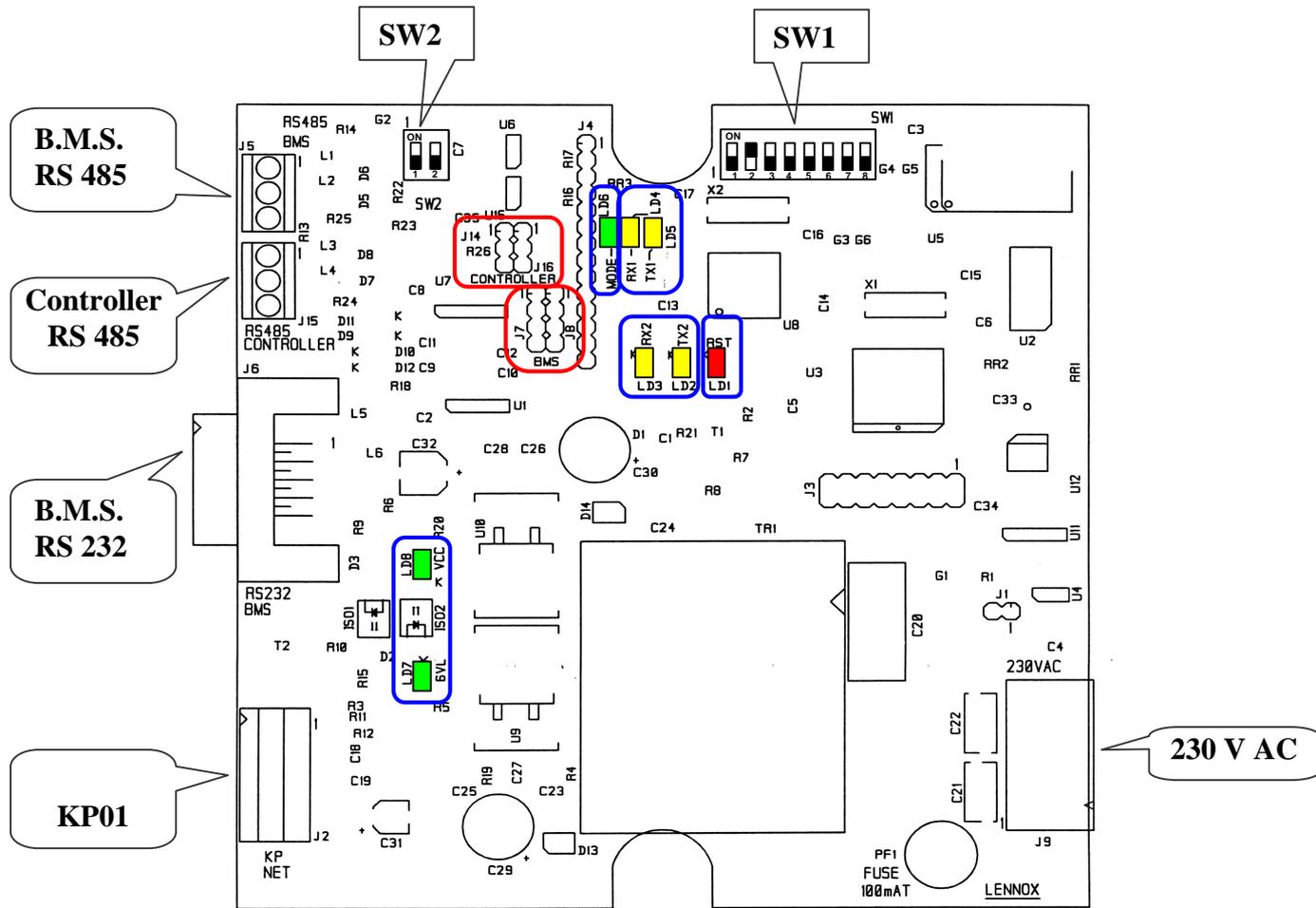
Detailed in this document is the information to connect and set up the link between the EcoLean EAC or EAR unit via each individual Bus adaptor (factory installed) and the KP06. Also is the information to set the configuration for the KP06 interface either as a single or multiple units. To obtain communication testing tool contact ;benoit.henry@lennoxfrance.com
Connections between each KP06 & upto 8 Ecolean



- In each Ecolean unit there are a Bus Adapter. This Bus Adapter is factory installed and has the power supply and the EcoLean control connection already installed.
- The site connection between KP06 and Ecolean has to be made as detailed above with the following precautions:
 - The maximum RS485 cable length (from the KP06 to the last ECOLEAN) must not exceed 1.000 m.
 - When laying the cable, the local regulations and norms in force must always be respected.
 - It's recommending the use of a shielded cable with a cross section of 0,5 mm². (for example Belden 8762 model cable with PVC sheath, 2 wires plus a braid, 20 AWG, a nominal capacitance between the wires of 89 pF, a nominal capacitance between one wire and the other wires connected to the shield of 161 pF)..
 - Use the wires with the + and - connection and the shield for GND connection.
 - In the last **Ecolean is necessary to insert a resistor of 120 ohms** 1/4w between + and -.
- Each Ecolean connected a KP06 has to have a different address number between 1 and 8. This is in the Parameter setting in the Climatic controller. See IOM controller E210/E420

Parameter H45 in units EAC 0091 to EAC 0812 and EAR 0091 to 0431
 Parameter H66 in units EAR 0472 to EAR 0812
- Its necessary to configure the KP06 for RS485 net (J14 and J16 switches are in the position 1-2)

KP06 Board

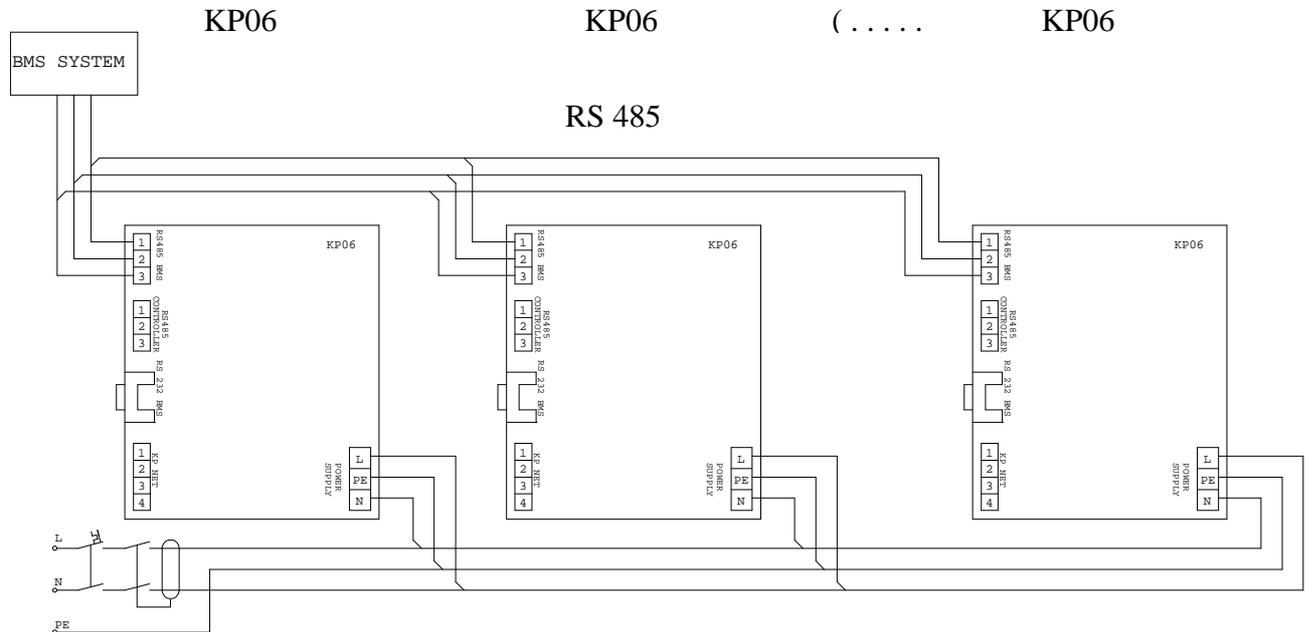


- SW1 :** Configuration of the mode of communication speed with the B.M.S.
- SW2 :** Configuration line RS485 (see the configuration table: 1 for B.M.S. and 2 for Controller)
- J14 and J16 :** Jumpers to allow the selection of communication type (RxD et TxD) at the controller port
- J7 and J8 :** Jumpers to allow the selection of the type of communication(RxD et TxD) at the B.M.S connection port.
- J5 :** Connection 3 points 3.81 for the line to B.M.S. if RS485
- J6 :** Connection DB9 female for the line to B.M.S. if RS232.
- J15 :** Connection 3 points 3.81 for the line to Controller if RS485
- J2 :** Connector 4 points 5.08 by screw to link to the Climatic II
- J9 :** Connection 3 points 7.62 for main power supply 230Vac
- PF1 :** Fuse 100mA .
- U3 :** Microprocessor 89C51RD2
- U5 :** Memory RAM 32 k octets
- LD2 :** Led yellow TxD communication with controller
- LD3 :** Led yellow RxD communication with controller
- LD4 :** Led yellow RxD communication with B.M.S.
- LD5 :** Led yellow TxD communication with B.M.S.
- LD1 :** Led red General reset.
- LD6 :** Led green unit operational
- LD7 :** Led green supply to Bus adaptor 6V is present I
- LD8 :** Led green general supply 5V is present

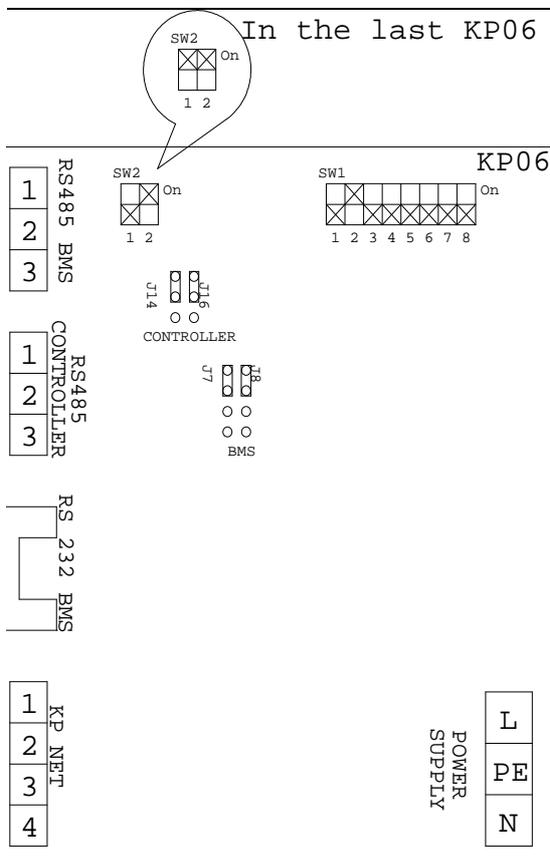
4.- Connections KP06 configuration

This could be a typical connection of KP06 to the BMS. (with RS485 net)

Connections between KP06 & BMS



Setting the KP06



- The connection between BMS and KP06 has to be made as the figure shows, with the following precautions:
 - When laying the cable, the regulations in force must always be respected.
 - All KP06 must be supplied with 230 Vac/50 Hz + PE (+/-15%). Use cable with cross section 1,5 mm².
 - *(for example Belden 8762 model cable with PVC sheath, 2 wires plus a braid, 20 AWG, a nominal capacitance between the wires of 89 pF, a nominal capacitance between one wire and the other wires connected to the shield of 161 pF)..*
 - All RS485 length (from the BMS to the last KP06) must not exceed 1.000 m.
 - BMS bus is RS 485. It connects the RS 485 BMS port of all KP06 in parallel.
 - It's recommending the use of a shielded cable with a cross section of 0,5 mm².
- The J8 and J9 switches of all KP06 are in the position 1-2.
- The SW2-1 of all KP06 is in position off except the last KP06 where is in on.
- The SW1-7 and 8 is used for configure the communication's speed of BMS.

Bauds	1200	2400	4800	9600
SW1-7	ON	ON	OFF	OFF
SW1-8	ON	OFF	ON	OFF

The other switches of SW1 have to be as the figure shows.

EAC 0091 to EAC 0812 and EAR 0091 to 0431

00H	Pa_G01	Cooling Setpoint	Word R/W	Between Pa_H03 y Pa_H04 (°C x 10)
01H	Pa_G02	Heating Setpoint	Word R/W	Between Pa_H01 y Pa_H02 (°C x 10)
02H	MachineStatus	Machine_Status	Word R/W	00H (00000000) off 04H (00000100) Stand-by 05H (00000101) Cool 06H (00000110) Heat
80H	Pa_H01	Max setpoint in heating	Word R	Information
81H	Pa_H02	Min setpoint in heating	Word R	Information
82H	Pa_H03	Max setpoint in cooling	Word R	Information
83H	Pa_H04	Min setpoint in cooling	Word R	Information
84H	ST1_MSB	Water Inlet Temp: MSB	Word R	°Cx10=ST1_MSB*256+ST1_LSB
85H	ST1_LSB	Water Inlet Temp: LSB	Word R	
86H	ST2_MSB	Water Outlet Temp: MSB	Word R	°Cx10=ST1_MSB*256+ST1_LSB
87H	ST2_LSB	Water Outlet Temp: LSB	Word R	
88H	ST3_MSB	Piping: MSB	Word R	°Cx10=ST1_MSB*256+ST1_LSB
89H	ST3_LSB	Piping: LSB	Word R	
8AH	Ana_Output	Analog output	Word R	Fan Speed Controls
8BH	Digit_Input	Digital Input	Word R	bit0 - Digital input on ST4 Cool/heat remote EAR 0091 to 0431 2° Comp.Th. protection EAC 0472 to 0812 bit1 - Digital input on ST2 - N/U bit2 - Digital input on ST1 - N/U bit3 - Digital input ID3 - flow switch bit4 - Digital input ID4 - 1° Comp.Th. protection bit5 - Digital input ID5 - remote ON/OFF bit6 - Digital input ID1 - High pressure bit7 - Digital input ID2 - Low pressure
8CH	Digit_Output	Digital Output	Word R	bit0 - Relay 1 - Compressor bit1 - Relay2 - Water pump bit2 - Relay3 - Reverse valve EAR 0091 to EAR0431 2° Compressor EAC 0472 to 0812 bit3 - Realy4 - Antifrost heater bit4 - 24 V alarm output bit5 - N/U bit6 - N/U bit7 - N/U
8DH	Alarm_Auto_1	Alarm_Auto_1	Word R	bit0 - ON/OFF remote (E00) bit1 - High pressure digital alarm (E01) bit2 - Low pressure digital alarm (E02) bit3 - Flow meter digital alarm (E41) bit4 - Fan thermal digital alarm (E04) N/U bit5 - Antifreeze alarm (E05) bit6 - External antifreeze alarm (E43) N/U bit7 - High pressure analog alarm (E11)
8EH	Alarm_Auto_2	Alarm_Auto_2	Word R	bit0 - Low pressure analog alarm (E12) bit1 - Machine discharged alarm (E44) N/U bit2 - Configuration alarm (E45) bit3 - Probe 1 alarm bit4 - Probe 2 alarm (E06) bit5 - Probe 3 alarm (E07) bit6 - Probe 4 alarm (E42) bit7 - Control temperature high analog alarm
8FH	Alarm_Auto_3	Alarm_Auto_3	Word R	bit0 - Thermal switch compressor 1 (E03) bit1 - Thermal switch compressor 2 (E13) bit2 - N/U bit3 - N/U bit4 - N/U bit5 - N/U bit6 - N/U bit7 - N/U
90H	Alarm_Manu_1	Alarm_Manu_1	Word R	Same that Alarm_Auto_1
91H	Alarm_Manu_2	Alarm_Manu_2	Word R	Same that Alarm_Auto_2
92H	Alarm_Manu_3	Alarm_Manu_3	Word R	Same that Alarm_Auto_3

EAC 1003 to 1303 and EAR 0472 to EAR 1303

00H	Pa_G01	Cooling Setpoint	Word R/W	Between Pa_H03 y Pa_H04 (°C x 10)
01H	Pa_G02	Heating Setpoint	Word R/W	Between Pa_H01 y Pa_H02 (°C x 10)
02H	MachineStatus	Machine_Status	Word R/W	00H (00000000) off 80H (10000000) Stand-by 81H (10000001) Cool 82H (10000010) Heat
80H	Pa_H01	Max setpoint in heating	Word R	Information
81H	Pa_H02	Min setpoint in heating	Word R	Information
82H	Pa_H03	Max setpoint in cooling	Word R	Information
83H	Pa_H04	Min setpoint in cooling	Word R	Information
84H	ST1	Water Inlet Temp	Word R	°Cx10
85H	ST2	Water Outlet Temp	Word R	°Cx10
86H	ST3	Pipe circuit 1	Word R	°Cx10
87H	ST6	Pipe circuit 2	Word R	°Cx10
88H	Hour_Funct_1	Hours funct. compressor 1	Word R	
89H	Hour_Funct_2	Hours funct. compressor 2	Word R	
8AH	Hour_Funct_3	Hours funct. compressor 3	Word R	
8BH	Hour_Funct_4	Hours funct. compressor 1	Word R	
8CH	Hour_Funct_5	Hours funct. water pump	Word R	
8DH	Ana_Output_1	Analog Output 1	Word R	Fan speed control 1
8EH	Ana_Output_2	Analog Output 2	Word R	Fan speed control 2
8FH	Digit_Input_LSB	Digit Input	Word R	bit0 - Digital input ID11 - N/U bit1 - Digital input ID13 - EAR 0472 to 0812 - N/U EAR&EAC 1003 to 1303 - Thermal compressor 2 bit2 - Digital input IDST4 - Remote heat/cool bit3 - Digital input ID3 - EAR 0472 to 0812 - Thermal compressor 1 EAR&EAC 1003 to 1303 - Thermal fan motor 1 bit4 - Digital input ID2 - Low pressure 1 bit5 - Digital input ID1 - High pressure 1 bit6 - Digital input ID14 - EAR 0472 to 0812 - N/U EAR&EAC 1003 to 1303 - Thermal compressor 3 bit7 - Digital input ID15 - EAR 0472 to 0812 - N/U EAR&EAC 1003 to 1303 - Thermal compressor 4 bit 8 to 15 - N/U
90H	Digit_Input_MSB	Digital Input	Word R	bit0 - Digital input ID6 - High pressure 2 bit1 - Digital input ID4 - End defrost pressure switch 1 bit2 - Digital input ID5 - Flow switch bit3 - Digital input ID7 - Low pressure 2 bit4 - Digital input ID12 - EAR 0472 to 0812 - N/U EAR&EAC 1003 to 1303 - Thermal compressor 1 bit5 - Digital input ID10 - Remote ON/OFF bit6 - Digital input ID8 - EAR 0472 to 0812 - Thermal compressor 2 EAR&EAC 1003 to 1303 - Thermal fan motor 2 bit7 - Digital input ID9 - En defrost pressure switch 2 bit 8 to 15 - N/U
91H	Digit_Output_LSB	Digital Output	Word R	bit0 - Relay8 - Alarm signal bit1 - Relay1 - Compressor 1 bit2 - Relay2 - Reverse valve 1 bit3 - Relay3 - Compressor 2 bit4 - Relay4 - Reverse valve 2 bit5 - Relay5 - Water pump bit6 - Relay6 - Antifrost electrical heater bit7 - Relay7 - Antifrost electrical heater bit 8 to 15 - N/U
92H	Digit_Output_MSB	Digital Output	Word R	bit0 - bit1 - bit2 - bit3 - bit4 - bit5 - bit6 - Relay10 - EAR 0472 to 0812 - Condensing fan 2 (FP2 version) EAR&EAC 1003 to 1303 - Compressor 3 bit7 - Relay9 - EAR 0472 to 0812 - Condensing fan 1 (FP2 version) EAR&EAC 1003 to 1303 - Compressor 3) bit 8 to 15 - N/U
93H	Alarm_Auto_1	Alarm_Auto_1	Word R	bit0 - ON/OFF remote (E00) bit1 - High pressure circuit 1 digital alarm (E01) bit2 - Low pressure circuit 1 digital alarm (E02)

				bit3 - Thermal switch compressor 1 digital alarm (E03) bit4 - Fan thermal digital alarm (E04) N/U bit5 - Antifreeze alarm (E05) bit6 - Probe 2alarm (E06) bit7 - Probe 3alarm (E07) bit 8 to 15 - N/U
94H	Alarm_Auto_2	Alarm_Auto_2	Word R	bit0 - High pressure compressor 1 alarm (E09) N/U bit1 - High pressure circuit 1 analog input (E11) bit2 - Low pressure circuit 1 analog input (E12) bit3 - Thermal switch compressor 2 (E13) N/U bit4 - High pressure compressor 2 alarm (E19) N/U bit5 - High pressure circuit 2 alarm (E21) bit6 - Low pressure circuit 2 alarm (E22) bit7 - Thermal switch compressor 3 alarm (E23) bit 8 to 15 - N/U
95H	Alarm_Auto_3	Alarm_Auto_3	Word R	bit0 - Thermal switch fan 2 (E03) bit1 - Internal circuit antifreeze analogue alarm (E25) bit2 - Probe 5 alarm (E26) bit3 - Probe 6 alarm (E27) bit4 - High pressure compressor 3 (E29) N/U bit5 - High pressure circuit 2 analog (E31) bit6 - Low pressure circuit 2 analog (E32) bit7 - Thermal switch compressor 4 alarm (E33) bit 8 to 15 - N/U
96H	Alarm_Auto_4	Alarm_Auto_4	Word R	bit0 - High pressure compressor 4 alarm (E39) N/U bit1 - Probe 1 alarm (E40) bit2 - Flow switch (E41) bit3 - Probe 4 alarm (E42) bit4 - Antifreeze external circuits (E43) N/U bit5 - Machine discharged (E44) N/U bit6 - Configuration error (E45) bit7 - High temperature regulation algorithm (E46) bit 8 to 15 - N/U
97H	Alarm_Manu_1	Alarm_Manu_1	Word R	Same that Alarm_Auto_1
98H	Alarm_Manu_2	Alarm_Manu_2	Word R	Same that Alarm_Auto_2
99H	Alarm_Manu_3	Alarm_Manu_3	Word R	Same that Alarm_Auto_3
9AH	Alarm_Manu_4	Alarm_Manu_4	Word R	Same that Alarm_Auto_4
9BH	Ver	Version	Word R	