TeKne Dental

Application Notes

DUOPAD® CONTROL UNIT

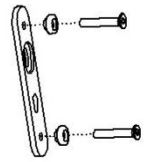
March 2017

DESCRIPTION

The new compact DUOPAD control unit can be used to control the DEFINITIVE®LED electric micromotor and the TITANUS®E or TITANUS®S piezo-electric scaler. Information on the status of the micromotor or scaler is clearly displayed on the graphic LCD.

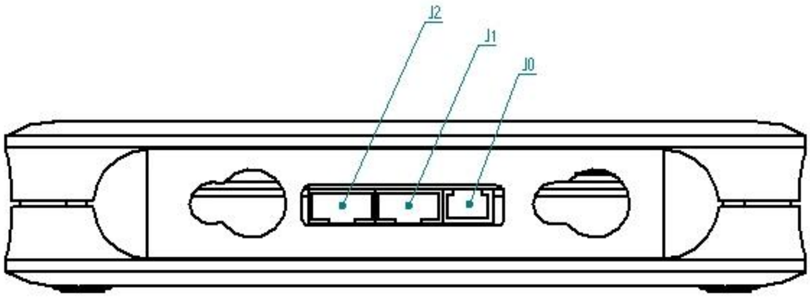
ASSEMBLY

The DUOPAD control box can be directly connected to the BMC40 and/or USC60 electronic boards. Power supply is taken directly from the BMC40 board. Commands and information are exchanged and transmitted via the RS232 serial port. To make sure that the BMC40 has been loaded with the right software, at startup the DUOPAD LCD must show the following: **BMC40 REV. 45Y (or higher)**



Thanks to the supplied metal bracket, the DUOPAD box can be easily fixed to the existing dental Unit's frame: make two holes on the Unit frame so as to lock the bracket by means of the two screws. Tighten the two screws firmly. Finally, fix the DUOPAD box onto the two protruding pads by inserting them in the two slots and pushing the box downward.

CONNECTION



MAIN MICROMOTOR: Connect one side of a 4-wire cable to the J1 connector on the DUOPAD output port (see drawing above); connect the other side of the 4-wire cable to the J3 connector on the BMC40 electronic board.

OPTIONAL SECOND MICROMOTOR: Connect one side of the 4-wire cable to the J2 connector on the DUOPAD output port (see drawing above) and connect the other side of the 4-wire cable to the J3 connector on the second BMC40 electronic board; this connection will get control of the second micromotor (B).
OPTION: alternatively it is possible to employ a MOT2 electronic board instead of the second BMC40 one; in this case the "MOT2" setting must be set "ON"; for the wiring diagram of the MOT2 electronic board, please refer to the MOT2 Application Notes.

OPTIONAL SCALER: Connect one side of a 4-wire cable to the J2 connector on the DUOPAD output port (see drawing above) and connect the other side of the 4-wire cable to the J3 connector on the USC60 electronic board (Digital control, see Fig.1);
OPTION: alternatively it is possible to connect the 2-wire cable to the J0 connector on the DUOPAD output port and connect the two red and black wires respectively to pin 7 (POWER) and pin 6 (GROUND) of the 11-pin connector (J1) of the USC60 electronic board (Analogue control, see Fig.2). Any other scaler's electronic board can be used as long as it has a 0÷5 Vdc input pin. If the scaler is not used, keep the 2-wire cable disconnected.

On each BMC40 electronic board an electric (EPOT) or pneumatic (PPOT) potentiometer should be connected on pins 1, 2 and 3 (of connector J1) so as to allow speed adjustment from 0 rpm (STOP) to the maximum LIMIT preset on DUOPAD unit.
If the used BMC40 board is set in SWITCH mode and in case no potentiometer is connected to it, it is necessary to connect pin 2 and pin 3 together by means of an external wiring: in this case there is no adjustment and the shown speed is always the true micromotor's speed.

CONTROL KEYBOARD

By means of the soft-touch keyboard, it is possible to choose the instrument and select the appropriate mode.
The MODE button is used to enter the menu for instrument selection and/or settings.
The SETTINGS menu will allow to read current settings STATUS, select the LIGHT enable option and adjust LCD CONTRAST.
It is also possible to SAVE current settings into the internal memory so as to get them again at the next power-up.
To select the menu options, use the UP and DOWN buttons. These buttons can also be used to scroll up or down different pages.
To confirm the selected menu option, press the OK (MODE) button.
To escape from a menu page, press the ESC (50%) button.

MICROMOTOR MODE

Two micromotors can be controlled (A & B) but however only the selected one can be run. The other cannot be started.
The MICROMOTOR (A or B) can be chosen after entering the main instrument menu by means of the MODE pushbutton.
In any case, when the micromotor is started, the operating mode will automatically toggle to MICROMOTOR mode.
In this mode, it is possible to adjust speed (by means of the three upper pushbuttons) and direction mode (by means of the REV pushbutton, only active when motor is not running). In case the REVerse direction is selected, a beep will be emitted as soon as the micromotor is running.
The shown speed on the DUOPAD is actually the maximum speed LIMIT. The attached potentiometer (or PPOT) on the BMC40 board will therefore allow speed adjustment from 0 rpm (STOP) to such maximum LIMIT.
It is also possible to select the gear ratio of the used handpiece (only 1:5, 1:1, 4:1, 6:1, 10:1, 16:1 and 20:1 ratios are possible) by means of the HP pushbutton (only active when motor is not running): the true output speed is therefore worked out and displayed.

SCALER MODE

The SCALER can be chosen after entering the main instrument menu by means of the MODE pushbutton. In this mode, it is possible to select the GENERAL/PERIO/ENDO mode so as to get three different possible output power ranges according to the following table:

MODE:	**ENDO**	**PERIO**	**GENERL**
MAX. POWER LEVEL	40%	70%	100%
MIN. POWER LEVEL	1%	10%	30%

The maximum power level is available in GENERAL mode and the minimum power level is available in ENDO mode.

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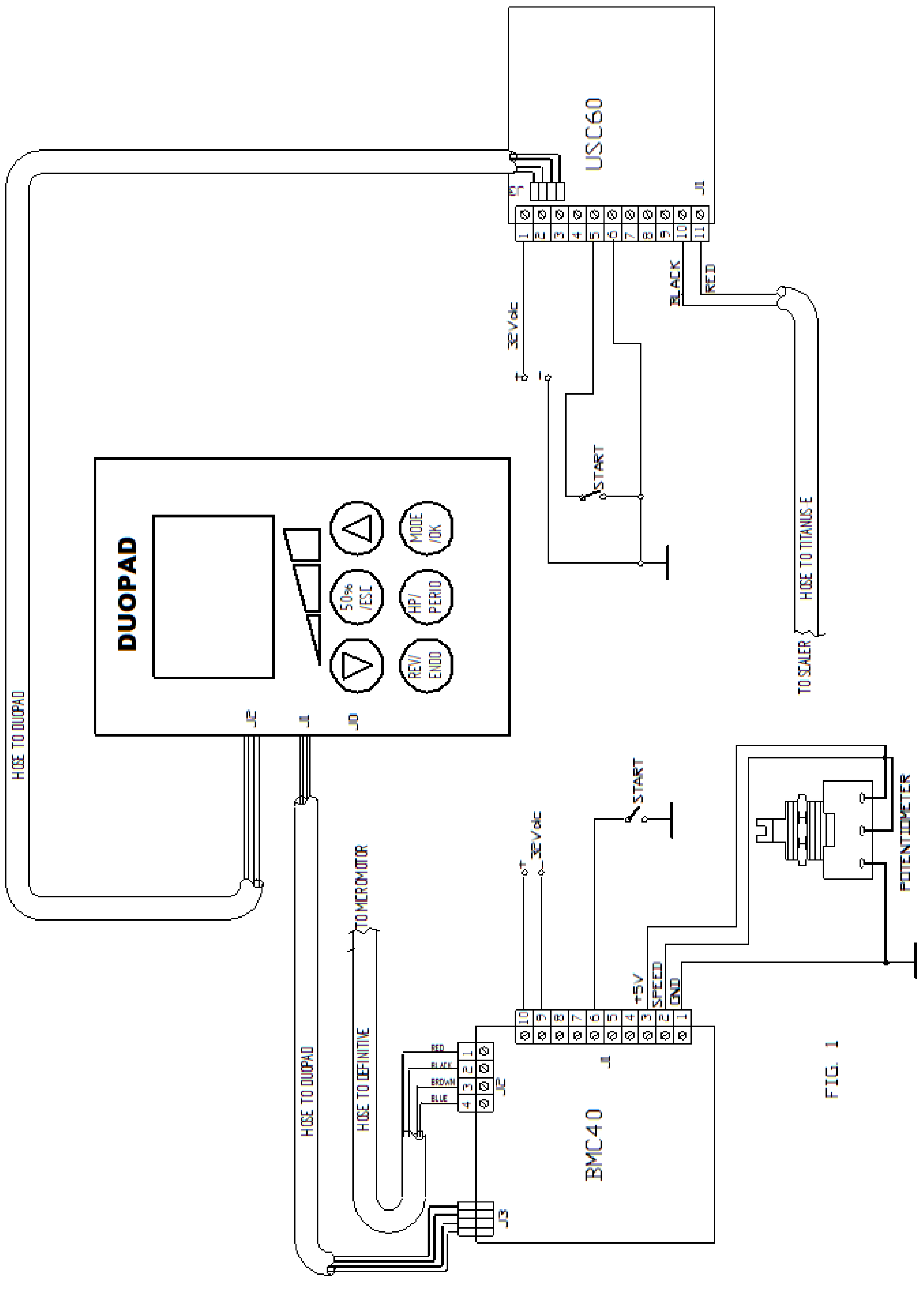
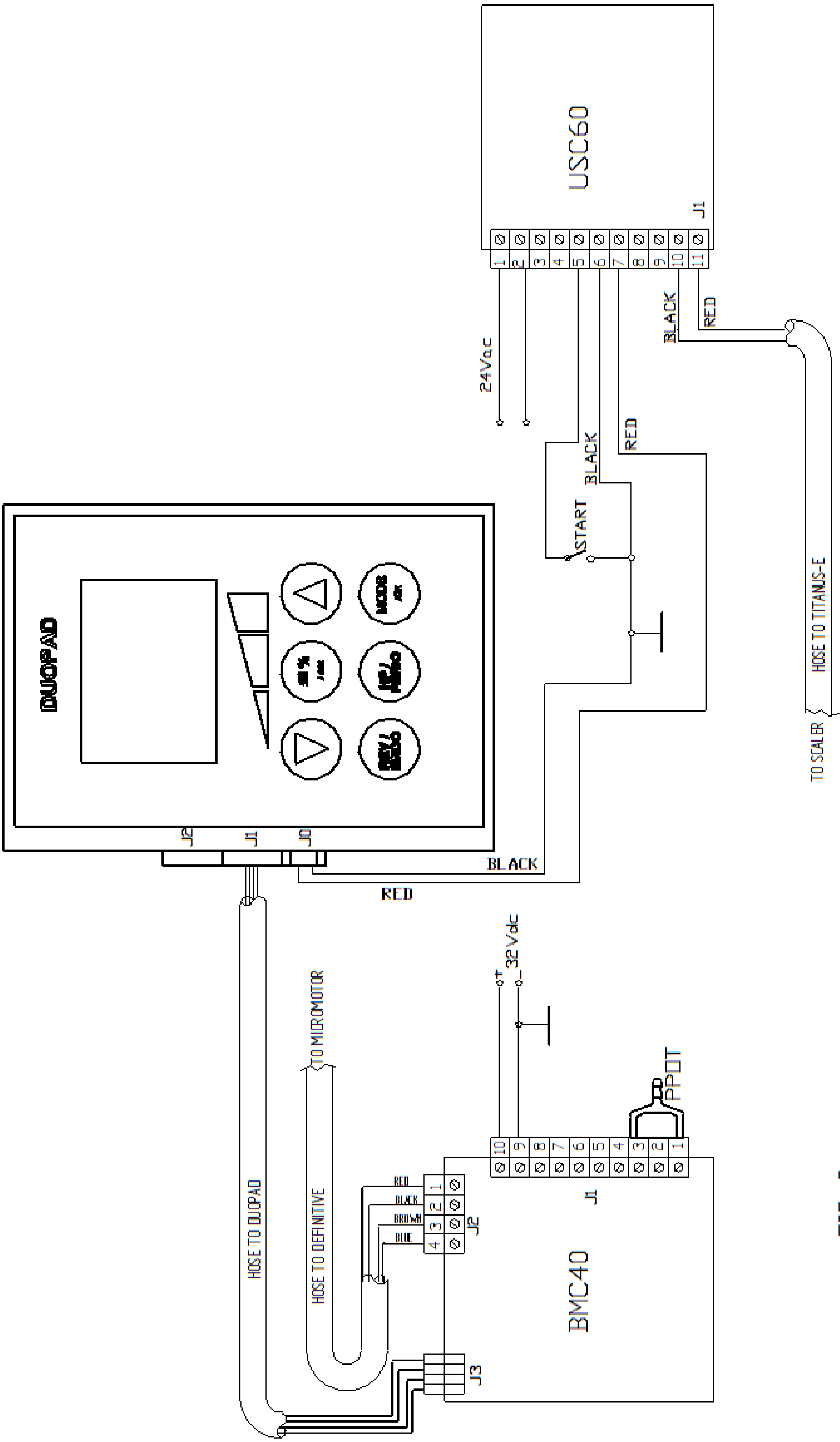

USC60
J1
32Vdc
+
-
START
BLACK
RED
HOSE TO TITANUS E
TO SCALER
DUOPAD
50% /ESC
MODE /OK
HP/ PERIO
REV/ ENDO
J2
J1
J0
HOSE TO DUOPAD
TO MICROMOTOR
HOSE TO DEFINITIVE
HOSE TO DUOPAD
BMC40
J1
J2
J3
RED
BLACK
BROWN
BLUE
+5V
SPEED
GND
32Vdc
START
POTENTIOMETER

FIG. 1



USC60
J1
1
2
3
4
5
6
7
8
9
10
11
24Vac
BLACK
RED
START
BLACK
RED
HOSE TO TITANUS-E
TO SCALER
DUOPAD
J2
J1
J0
BLACK
RED
32Vdc
PPOT
TO MICROMOTOR
HOSE TO DEFINITIVE
HOSE TO DUOPAD
RED
BLACK
BROWN
BLUE
J2
J1
BMC40
J3

FIG. 2