## 7. PROGRAMS

## PRESET PROGRAMS – TENS

CEFAR REHAB X2 has six preset TENS programs for pain relief. The program overview below shows the stimulation mode and parameter settings for each program. For information on treating various pain conditions with TENS, see the clinical guide last in this manual. For further information on programs P4–P5, see chapter *FREQUENTLY ASKED QUESTIONS*.

## **P1** - CONVENTIONAL TENS

High-frequency stimulation that causes a tingling sensation. This is often the first choice for both acute and long-term pain.

Frequency	80 Hz
Pulse duration	180 µs
Total program time	– – min.

## P2 - BURST TENS

Low-frequency stimulation that produces visible muscle contractions. The pain relief sets in slower but lasts longer than conventional TENS.

Frequency	2 Hz
Pulse duration	180 µs
Total program time	– – min.

## P3 - MODULATED PULSE DURATION TENS

A type of high-frequency stimulation where the pulse duration varies continuously. This can cause an undulating sensation, which may be more pleasant than constant pulse duration.

Frequency	80 Hz
Pulse duration 1	70 µs
Pulse duration 2	180 µs
Modulation time	2 sec.
Total program time	– – min.

## P4 – MIXED FREQUENCY TENS

A combination of high- and low-frequency stimulation, which can lead to a more effective pain relief treatment.

Frequency 1	80 Hz
Frequency 2 (burst)	2 Hz
Pulse duration	180 µs
Modulation time	3/3 sec.
Total program time	– – min.

## **P5** – FLOW TENS

An alternating stimulation causing a massaging and pumping effect that can be used for pain relief and increased circulation in the stimulated area. Always use 2 channels and 4 electrodes. Frequency 80 Hz Pulse duration 1 70 µs Pulse duration 2 180 µs Modulation time 2 sec. Total program time - - min.

## P6 – GUIDE TO INTRAMUSCULAR INJECTIONS

A program used to increase the precision of intramuscular botox (botulinum toxin) injections. These injections are used for spasticity, dystonia, facial hemispasm and bruxism.

Frequency	1 Hz
Pulse duration	50 µs
Total program time	– – min.

#### **PRESET PROGRAMS – NMES**

CEFAR REHAB X2 has 21 preset NMES programs, covering warm up, rehabilitation, strengthening, recovery and massage. In the clinical guide, last in this manual, is a list of indications with suggested treatment programs and electrode placements for each indication. P9–P16 and P19–P23 can be used together with the hand switch, which makes it easy to manually control muscle contractions.

#### P7 - WARM UP, SHORT

Frequency 1	2 Hz
Frequency 2	8 Hz
Pulse duration	300 µs
Modulation time	10 sec.
Total program time	– – min.

## P8 – WARM UP, LONG

Frequency 1	2 Hz
Frequency 2	8 Hz
Pulse duration	300 µs
Modulation time	10 sec.
Total program time	– – min.

#### **P9** - INTERMITTENT STIMULATION Smaller muscle groups

Frequency	50 Hz
Pulse duration	200 µs
Work time	4 sec.
Rest time	4 sec.
Ramp-up time	2 sec.
Ramp-down time	2 sec.
Total program time	– – min.

## P10 - INTERMITTENT STIMULATION Larger muscle groups

50 Hz
400 µs
4 sec.
4 sec.
2 sec.
2 sec.
– – min.

## **P11** - INTERMITTENT STIMULATION Smaller muscle groups

Frequency	65 Hz
Pulse duration	200 µs
Work time	6 sec.
Rest time	8 sec.
Ramp-up time	2 sec.
Ramp-down time	2 sec.
Total program time	– – min.

## P12 - INTERMITTENT STIMULATION Larger muscle groups

Frequency	65 Hz
Pulse duration	400 µs
Work time	6 sec.
Rest time	8 sec.
Ramp-up time	2 sec.
Ramp-down time	2 sec.
Total program time	– – min.

## **P13** - INTERMITTENT STIMULATION Smaller muscle groups

Frequency	50 Hz
Pulse duration	200 µs
Work time	10 sec.
Rest time	10 sec.
Ramp-up time	1 sec.
Ramp-down time	2 sec.
Total program time	– – min.

## **P14** - INTERMITTENT STIMULATION Larger muscle groups

Frequency	50 Hz
Pulse duration	400 µs
Work time	10 sec.
Rest time	10 sec.
Ramp-up time	1 sec.
Ramp-down time	2 sec.
Total program time	– – min.

### **P15** – INTERMITTENT STIMULATION Neurology, smaller muscle groups

Frequency	40 Hz
Pulse duration	200 µs
Work time	5 sec.
Rest time	15 sec.
Ramp-up time	4 sec.
Ramp-down time	2 sec.
Total program time	– – min.

#### **P16** – INTERMITTENT STIMULATION Neurology, larger muscle groups

Frequency	40 Hz
Pulse duration	400 µs
Work time	5 sec.
Rest time	15 sec.
Ramp-up time	4 sec.
Ramp-down time	2 sec.
Total program time	– – min.

## **P17** – ALTERNATING STIMULATION Smaller muscle groups

Frequency	50 Hz
Pulse duration	200 µs
Work time	4 sec.
Rest time	6 sec.
Ramp-up time	l sec.
Ramp-down time	l sec.
Total program time	– – min.

## **P18** - ALTERNATING STIMULATION Larger muscle groups

Frequency	50 Hz
Pulse duration	400 µs
Work time	4 sec.
Rest time	6 sec.
Ramp-up time	l sec.
Ramp-down time	1 sec.
Total program time	– – min.

# **P19** – STIMULATION WITH ACTIVE REST

### Smaller muscle groups

Frequency – work	50 Hz
Frequency – rest	8 Hz
Pulse duration	200 µs
Work time	10 sec.
Rest time	10 sec.
Ramp-up time – work	2 sec.
Ramp-down time – work	2 sec.
Ramp-up time – rest	1 sec.
Ramp-down time – rest	l sec.
Total program time	– – min.

## P20 – STIMULATION WITH ACTIVE REST

#### Larger muscle groups

Frequency – work	50 Hz
Frequency – rest	8 Hz
Pulse duration	400 µs
Work time	10 sec.
Rest time	10 sec.
Ramp-up time – work	2 sec.
Ramp-down time – work	2 sec.
Ramp-up time – rest	l sec.
Ramp-down time – rest	l sec.
Total program time	– – min.

## **P21** – STRENGTHENING Upper extremities

Frequency 1	25 Hz
Frequency 2	45 Hz
Pulse duration	200 µs
Work time	5 sec.
Rest time	8 sec.
Ramp-up time	2 sec.
Ramp-down time	1 sec.
Total program time	– – min.

## **P22** – STRENGTHENING Lower extremities

Frequency 1	45 Hz
Frequency 2	65 Hz
Pulse duration	400 µs
Work time	5 sec.
Rest time	8 sec.
Ramp-up time	2 sec.
Ramp-down time	1 sec.
Total program time	– – min.

## **P23** – STRENGTHENING Back and trunk

Frequency 1	30 Hz
Frequency 2	50 Hz
Pulse duration	300 µs
Work time	5 sec.
Rest time	8 sec.
Ramp-up time	2 sec.
Ramp-down time	1 sec.
Total program time	– – min.

## **P24** – RECOVERY Smaller muscle groups

Frequency	4 Hz
Pulse duration	200 µs
Total program time	– – min.

## P25 - RECOVERY

Larger musc	le groups
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Frequency	4 Hz
Pulse duration	400 µs
Total program time	– – min.

## **P26** – MASSAGE Smaller muscle groups

Frequency 1	5 Hz
Frequency 2	15 Hz
Pulse duration	200 µs
Modulation time	5 sec.
Total program time	– – min.

#### P27 – MASSAGE Larger muscle groups

0	0	
Frequency 1		5 Hz
Frequency 2		15 Hz
Pulse duration		400 µs
Modulation time		5 sec.
Total program tir	ne	– – min.

## **CUSTOM PROGRAMS**

With the CEFAR REHAB X2 it is possible to create and store three custom programs (P28–P30) for patient-specific treatment. To create a custom program, follow the programming procedure below. To use a custom program, follow the instructions in the section STEP-BY-STEP USE.

#### Programming

- 1. Press the **ON/OFF** button, ① to turn the stimulator on.
- 2. Press the **PROGRAM** button P+ or P- to step forward or backward until Program 28, 29 or 30 is shown on the display. Select one of these programs.
- 3. Press the **PROGRAMMING/CONFIRMATION** button s for 2 seconds to enter the programming mode. (See the programming chart for the following steps.)
- 4. Level 1 (shown in the upper right corner of the display):

The first step in the programming procedure is to choose between:

- Continuous (C) stimulation
- Intermittent (I) stimulation

Press the **INCREASE** (or **DECREASE**) button  $\bigvee$  to toggle between **C** and **I**. Confirm your choice by pressing the **PROGRAMMING/CONFIRMATION** button  $\bigcirc$ .

You are moved to the next stage in the programming procedure.

#### 5. Level 2

For Continuous stimulation there are no choices at Level 2. You are moved directly to Level 3.

If you chose Intermittent stimulation on Level 1, you now have two choices:

- Simultaneous (SI) stimulation
- Alternating (Alt) stimulation

Press the **INCREASE** (or **DECREASE**) button  $\heartsuit$  to toggle between **SI** and **Alt**. Confirm your choice by pressing the **PROGRAMMING/CONFIRMATION** button  $\bigcirc$ .

You are moved to the next stage in the programming procedure.

6. Level 3

The available stimulation types on this level depend on your previous choices.

Press the **INCREASE** (or **DECREASE**) button  $\nabla$   $\triangle$  to see the different stimulation types alternate on the display. The programming chart shows the parameter setting possibilities for each stimulation type.

Continuous stimulation types:

- Conventional (C)
- Burst (B)
- Pulse width/duration modulation (PWM)
- Frequency modulation (FM)

Intermittent/Simultaneous stimulation types:

- Conventional (C)
- Frequency modulation (FM)

For Intermittent/Alternating stimulation your only choice is Conventional stimulation, which is not

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shown on the display. You are moved directly to the next stage in the programming procedure (see step 7).

Press the **PROGRAMMING/CONFIRMATION** button <u>s</u> to confirm your choice of stimulation type and you are moved to the next stage in the programming procedure. In the following steps you will set the parameters for the selected stimulation type.

- 7. A preset parameter value is shown on the screen, but you can change this value by pressing the **INCREASE** (or **DECREASE**) button  $\heartsuit$ . The valid range for the parameter is shown in the programming chart.
- 8. Press the **PROGRAMMING/CONFIRMATION** button **s** to confirm your setting. You are now moved to the next stage (if any) in the programming procedure.
- 9. Repeat step 7 and 8 until the parameter value in the last stage is set.
- 10. The programming procedure is finished and you will automatically exit the programming mode. The new program is now selected and ready for use. The program is also stored in the stimulator for future use.

A custom program can be changed by redoing the programming.