



# CNC KEYBOARD MACRO CONTROLLER

## New MAHO Jog-Dial "NMJD"

### Product Documentation



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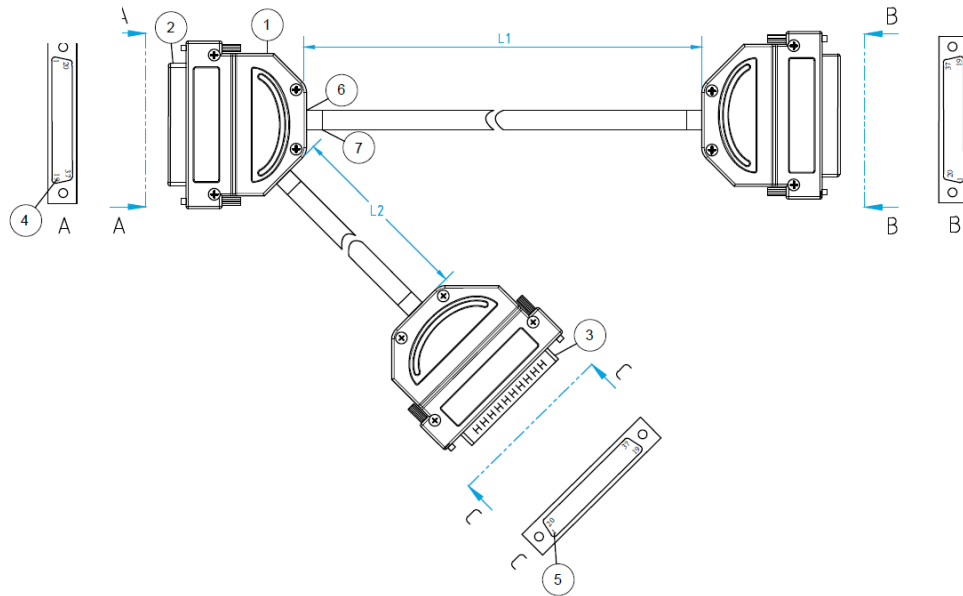
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# 1 Preface

Thank you for using our products!

"NMJD" is a **KEYBOARD MACRO CONTROLLER** for Philips®/MAHO® 432/10 CNC Controllers with standard a "CONTR TELENT MOD" module card installed.

For the optimum usage of this product please ensure that all people who handle this product "NMJD" have read and understood the product documentation. This documentation is part of the product and must be attached to the documentation of the CNC Controller.

The "NMJD" is manufactured in a state-of-the-art process with additional novelities with regards to mechanical, electrical stability and maximum EMI/EMC compliance. The "NMJD" is assembled in SMD technology.

The NMJD is physically enclosed with a rugged aluminum box rated IP40 and is ready for use ("Plug-And-Play") and no additional setup needs to be done on the box.

The "NMJD" Keyboard Macro Controller is compatible with the original "CONTR TELENT MOD" card. There are no other CNC-Controller (only 286/386 CPU) dependencies.



**Fig 1.1: Overview**

## 1.1 Product Idea

By using the manual controller device (HCD), connected to the "NMJD" you could "trigger" predefined operation steps inside your CNC Controller. Depending on the combinations of the dial selectors and the push-button, "NMJD" allows to navigate very fast in the menu system of the CNC Controller, without using the keyboard.

The predefined functions or macros are:

- X-Axis, single, tenth, hundreds, thousands
- Y-Axis, single, tenth, hundreds, thousands
- Z-Axis, single, tenth, hundreds, thousands
- 4-Axis, single, tenth, hundreds, thousands
- 5-Axis, single, tenth, hundreds, thousands
- 6-Axis, single, tenth, hundreds, thousands
- Special controlled contact #1
- Special controlled contact #2



### Example:

If you select "Y"-Axis and "X10"-Multiplier and trigger the command button, the keyboard sequence will be created and sent to the CNC Controller. Now you could use the Dial to select the desired value for Y-Axis (by x10).

At any time you are able to release the "NOT AUS" / "EMERGENCY OFF" of your machine.

## **2 Safety instructions**

To ensure the safe operation of this unit the instructions in this documentation must be strictly observed. In addition, all applicable legal and safety regulations for the respective application must be observed. The same applies to the use of accessories.

### **2.1 Intended usage**

The "NMJD" is meant as a hardware extension of a Philips/MAHO CNC Controller appliance equipped with a 286 or 386 processor card.

Any other use is regarded not in accordance with the intended usage.

Machinery and installations must be designed in a way that faulty conditions cannot lead to harmful situations for operating personnel (e.g. by improper installation etc.).

The product "NMJD" is intended to be used in a commercial and professional (B2B) environment only.

### **2.2 Qualified personnel**

The "NMJD" must only be operated in accordance with the technical specifications by qualified personnel. Personnel regarded qualified is familiar with the installation, assembly, putting into operation and operation of the units and possesses adequate professional qualification for the task.

All safety regulations like, "BetrSichV", "Maschinenrichtlinie", 2006/42/EC, must be known and followed when changing or modifying commercial equipment.

## 2.3 Remaining hazards

The “NMJD” is state-of-the-art technology and safe to operate. A risk of hazard can occur when deployed and operated improperly by untrained personnel.

The “NMJD” enclosure must not be opened. There are no operational parts or maintenance interfaces inside the enclosure. Using the external interfaces provided, every functionality can be accessed or used.

In this documentation remaining hazards are marked by the following warning symbol:



Special handling instructions or hazards (i.e. ESD handling or electrical shock) are marked by the following warning symbols:



**These symbols indicate that non-observance of the safety guidelines may cause hazards to persons to the point of severe injury or death and/or the possibility of property damage – especially ESD.**

## 3 Installation and Configuration

The following abstracts explain how to install the “NMJD” and integrate it in the CNC Controller installation.



The “NMJD” is equipped and delivered with two sets of pre-configured cables and a “Hand - Controller” also including its own cable. Please do NOT change, modify or extend this cables without checking the intended use-case back with your sales partner! Modifying the cables could possibly damage the “NMJD” or the CNC Controller itself.



Before disassembling or modifying your CNC Controller rack, please ensure that the CNC controller is switched **OFF and secured**. All precautions and safety rules must in place to avoid electrical shock or damages.



Handling of the internal controller card is critical due to ESD – please handle only in ESD safe areas.

### 3.1 Before Installation



Before you start installing the product please check:

- That you have made a SAFETY COPY of your machine parameters.
- That you are TRAINED and FAMILAR with installing this product.
- That your CNC Controller is switched OFF.

### 3.2 Mechanical Installation

Mechanically, the “NMJD” box is installed near the CNC controller rack by using screws or any other appropriate mounting.

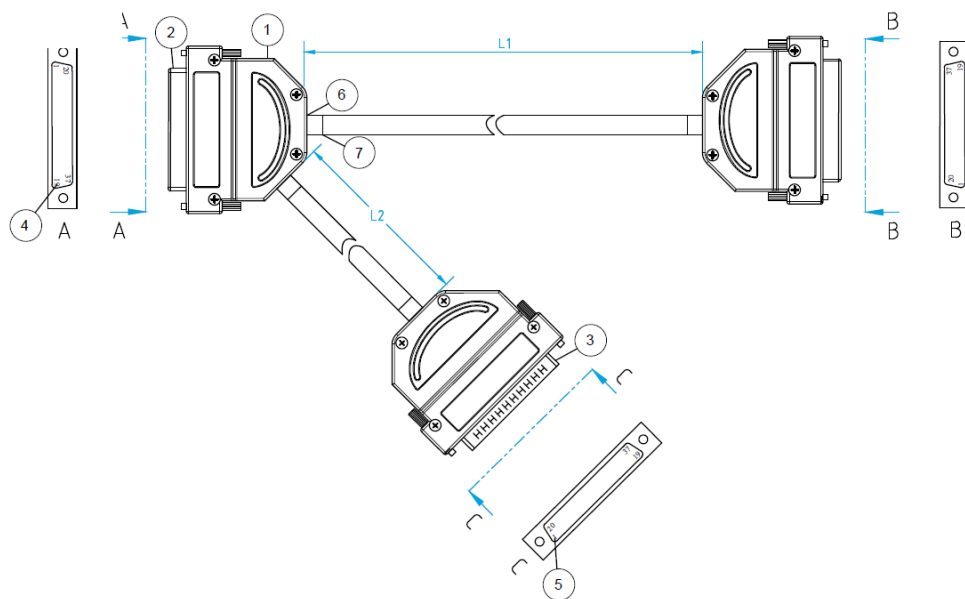


### 3.3 Electrical Installation

After mechanical installation of "NMJD" into the rack, some electrical installations and connections need to be done:

#### 3.3.1 Connection 19X19

There is a "Y-Cable" delivered to you with two SUB-D.37 MALE Connectors and one SUB-D.37 FEMALE connector. The "Y-Cable" is available in two different length.



**Fig 3.1: Y-Cable detail**

- 1.) Please **RELEASE** the existing connection at CON.19X19 at the front of the CNC Controller; "CONTRL TELET MOD" module.
- 2.) At "CONTRL/TELET MOD" module **PLUG-IN** the connector (SUB-D.37 MALE) marked "A".
- 3.) At the shorter end (500mm) of the "Y-Cable" (SUB-D.37 FEMALE) marked "B" **PLUG-IN** the cable connector that was applied to the "CONTRL TELET MOD" module before. If there is an "adapter-connector" (i.e. for the original MAHO "Handbedienpult" / "Hand-held control panel") please connect the complete installation to the connector marked "B".
- 4.) Finally **PLUG-IN** the longer end (2500 mm or 1500 mm) of the "Y-Cable" (SUB-D.37 MALE) marked "C" into the most LEFT slot of the "NMJD".

### 3.3.2 Connection RMS-Module

There is a second cable delivered to you with two SUB-D.15 MALE Connectors. Please connect one end (both end are equal) to the SUB-D.15 FEMALE slot at "NMJD" and the other end into one AVAILABLE/NOT USED RMS-Slot at your CNC-Controller rack.



The "NMJD" is configured by default to power the "HANDBEDIENGERÄT"/"HANDHELD CONTROL DEVICE" (HCD) (see 3.3.3) from the RMS module. For a proper operation of the HCD the connection from "NMJD" to the RMS module needs to be done using the above mentioned cable to operate the HCD.

Please see the overview picture at the next page.

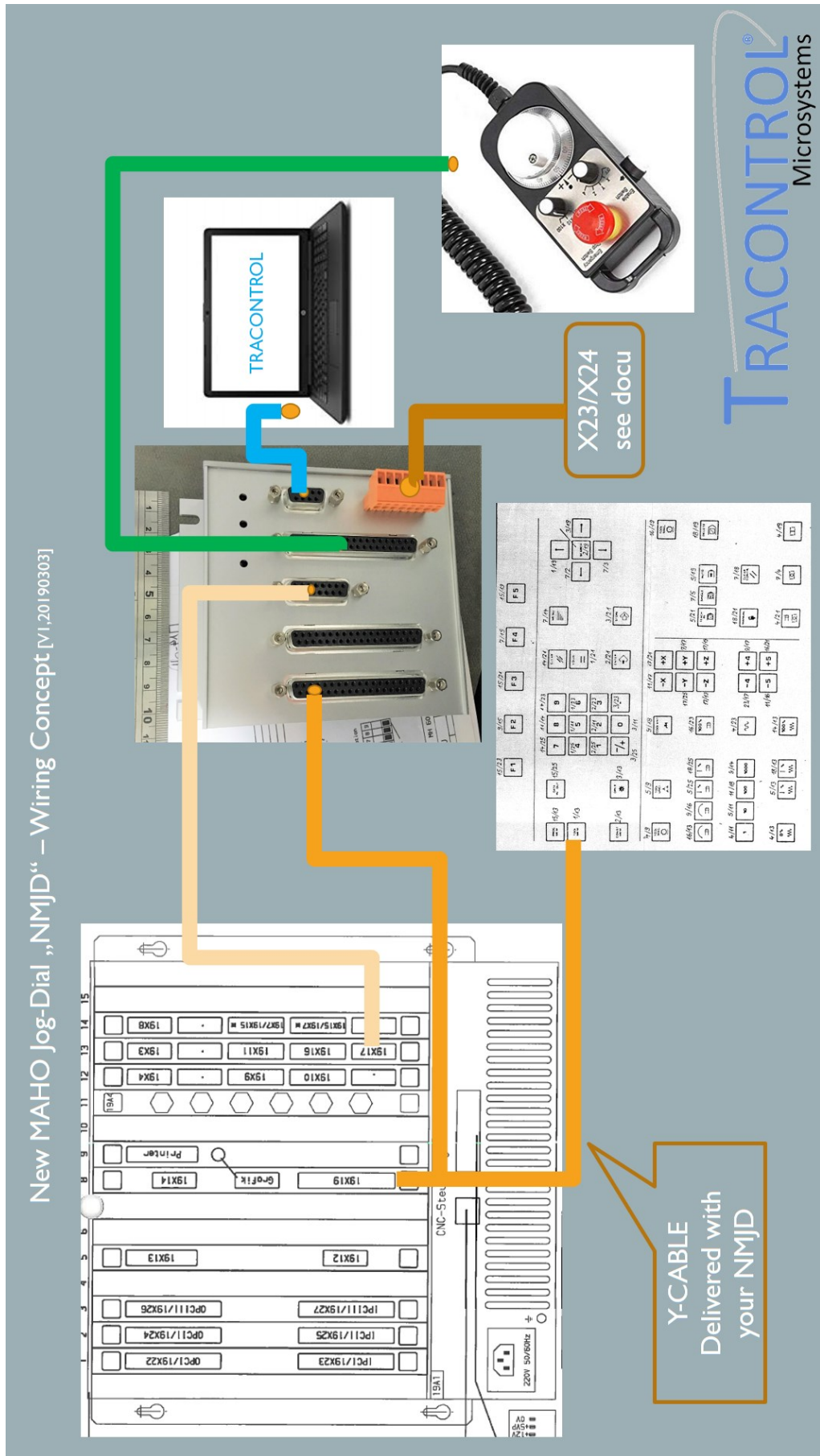


Fig 3.2: Wiring Concept

### 3.3.3 Connection XNMJD – „HANDBEDIENGERÄT“ / „HCD“

When you receive the „NMJD“, there is a customized HCD included. This HCD has a spiral-cable with a SUB-D.37 MALE Connector. This connector needs to be **PLUGGED-IN** into the most RIGHT (between SUB-D.15 and SUB-D.9) SUB-D.37 slot at the “NMJD”.

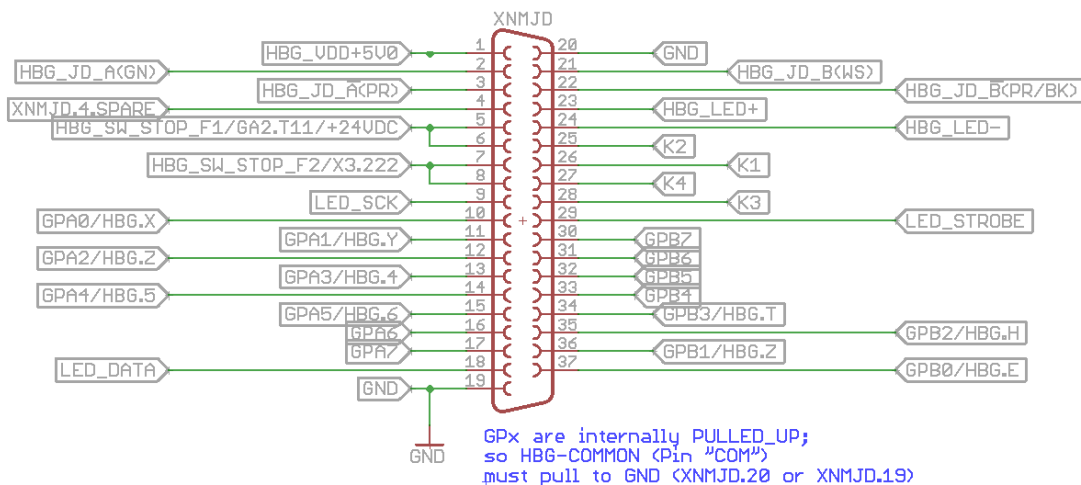


Fig 3.3: Detail connector "XJMJD"

### 3.3.4 Connection XEXT

On the "NMJD" there is one wire-to-box connector (type *WEIDMÜLLER BL 3.5-8*).



Fig 3.4: Connector "XEXT"

**XEXT.1 (RED) always** needs to be connected to CNC\_STOP\_F1 [GA2.T11] and the XEXT.4 (BLUE) needs to be connected to CNC\_STOP\_F2 [X3.222].

It is possible to connect a second "NOT-AUS" / "EMERGENCY OFF" line to XEXT. For this use-case please connect XEXT.1 (RED) to CNC\_STOP\_F1 [GA2.T11], the XEXT.2 (BLUE) needs to be connected to CNC\_STOP\_F2 [X3.222] and the second (zero voltage!) "NOT-AUS" / "EMERGENCY OFF"-chain switch is then connected to XEXT.3 and XEXT.4.

XEXT.5/6 and XEXT.7/8 are two zero voltage semiconductor contacts (max. rating 60VAC/500mA) controlled by "NMJD". Leave them unconnected if not used.

### **3.3.5 Connection DIA**

At the most top-right position of the "NMJD" there is a DSUB-9 connector available. This connector is used to update the internal Firmware.

## **3.4 Setup and checks**

There are some LEDs to visually check operation and error conditions:

- DIA (YELLOW): operated during FW-Updates.
- PWR (GREEN): lit when power-supply is OK.
- ERR (RED): lit when an error condition arises.
- EXC (GREEN): lit during execution of keyboard macros.

### 3.4.1 Power-On

When the CNC Controller start its boot program it performs a collection of tests and hardware checks.

If the "NMJD" was installed correctly, the power-up check must recognize the card indicating a "**PASSED**" for "CONTROL / TELET MOD".



If the power-up check finds an error at the "CONTROL / TELET MOD" switch off the CNC Controller immediately and perform a re-check of the installation.

In rare cases, there might be a mechanical or electrical problem with the chosen receptacle (CON.19X19 of "CONTROL / TELET MOD" card) CNC Controller.

Please **contact your sales partner** for further diagnosis.

## 3.5 Adoption of the machine parameters



Technically the "NMJD" is now installed and ready for use.

Now you need to make the additional RM channel available to act as the HCD-dial interface.

Please contact your **sales partner for further details**, as this is highly dependent on the configuration of you CNC Controller.

## 4 Type label

This documentation being part of the product "NMJD", the following type label for the product identifies the product according to the conformity declaration (93/68/EWG) even if it's not printed onto the product.

**Product name**

NMJD

KEYBOARD MACRO CONTROLER for Philips/MAHO CNC 432 Controller

**Manufacturer**

TRACONTROL Inh. Stephan Daub e.K.

Im See 1, DE-76703 Kraichtal



**Date:** 23.03.2019

**Type label**

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**Room for your notes**

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