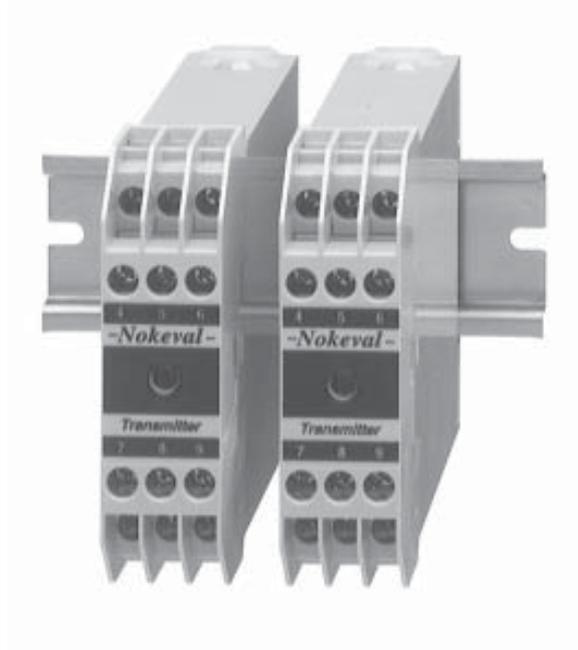


***Nokeval***

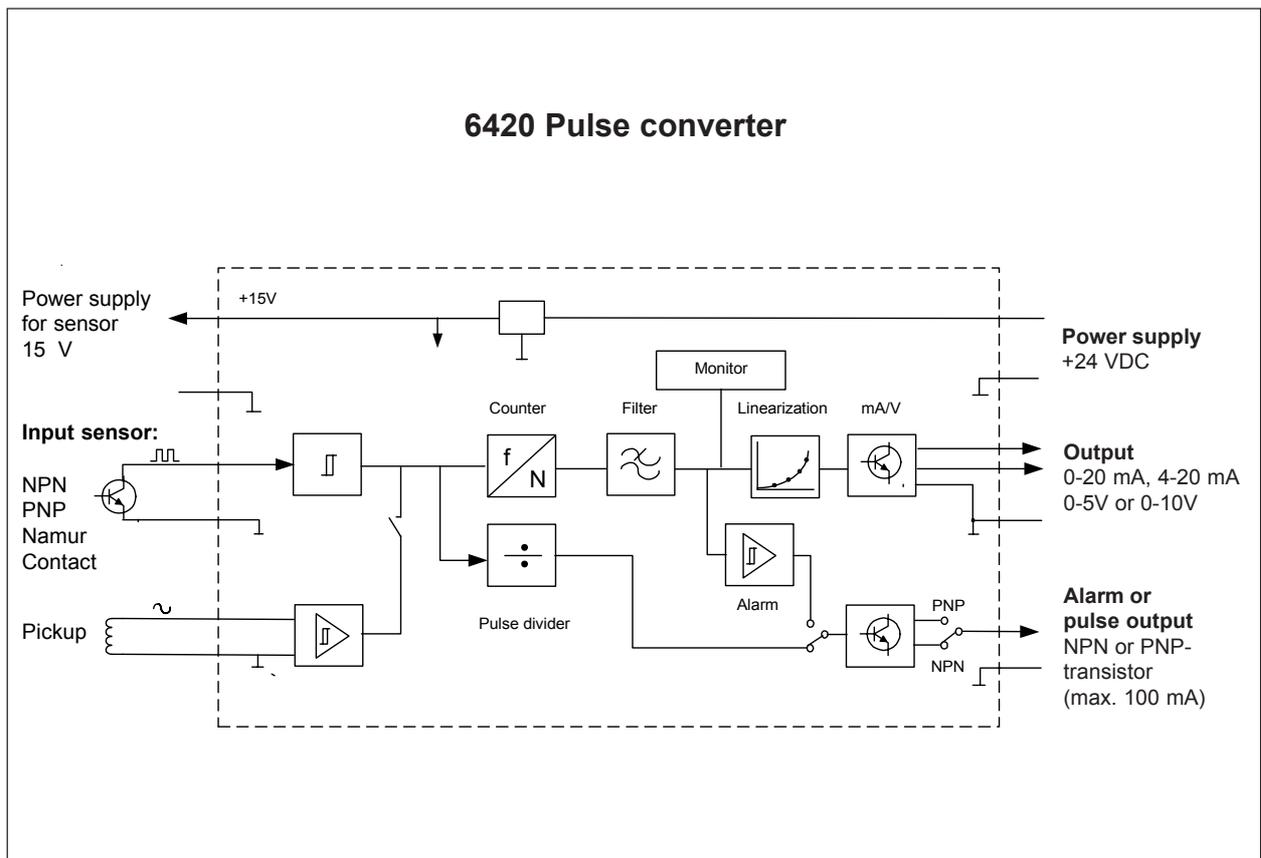
No 170807

# f/I Pulse converter 6420



# Contents

Description .....	3
6420 Pulse converter .....	3
Technical specification .....	4
Dimensions .....	4
Terminal connections .....	5
MekuWin software .....	6
Preparing .....	6
Configuration .....	7
Conf-Menu .....	7
Mode .....	7
Pickup .....	7
Prescaler .....	7
Debounce .....	7
LoPass .....	7
OUT .....	7
DIV .....	8
Count mode .....	8
Jumper settings .....	8
Hand-Held programmer 6790 .....	9



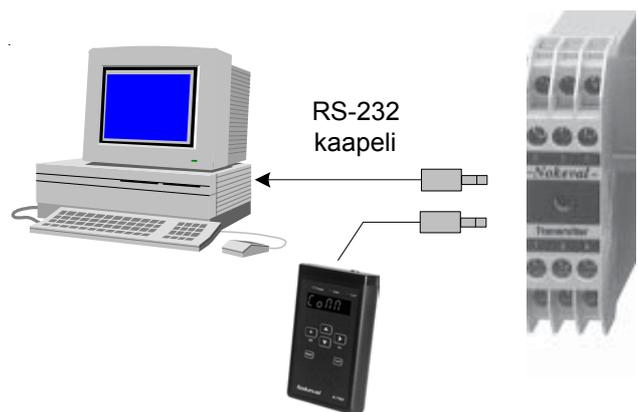
## Description

Pulse converter 6420 is especially suitable for pulse output flow sensors that can give less than one pulse per second. The interval between pulses can be as long as 4000 seconds. The frequency reading is converted to a mA or V signal for other instruments. Additionally, 6420 has one adjustable alarm output or alternatively a pulse divider output for e.g. electromechanical counter. This output can be selected between NPN and PNP type.

The converter is processor based and can be configured by general purpose configuration program MekuWin or alternatively by a hand-held programmer 6790.

It is possible to use 6420 as a pulse counter that increases the output signal for every pulse. This operation can be scaled freely. In this mode, the alarm output can be utilised as a batch controller.

Programming by MekuWin software  
or hand-held programmer 6790



# Technical specification:

<b>Sensors:</b>	NPN, PNP, Namur, contact, push-pull or magnetic pickup
<b>NPN/Concact/Namur:</b>	Input current range <1..>2.7 mA Open input voltage 9.7 V Input resistance 1.2 kΩ Shortage input current 8 mA
<b>PNP:</b>	Input resistance 5 kΩ Trigger level 2.5V (common)
<b>Pickup:</b>	Signal level 20..500 mV input resistance >1 MΩ
<b>Input ferquency:</b>	
Min. Frequency	4000 seconds/pulse (0.00025 Hz)
Max. Frequency	5 kHz (20 kHz with prescaler)
Min pulse width	100 μs
Filter	Digital filter freely selectable Filter for contact input debounce
<b>Sensor supply:</b>	15 V, max 50 mA 24 VDC power supply can also be used for sensor supply
<b>Counter function:</b>	Scaleable counter 4 000 000 000 increases output. Reset by external contact
<b>Output:</b>	
Current output	0..20 mA , 4..20 mA
Max. load	650 Ω
Load effects	<0.01%
Voltage output	0..5 V, 0..10 V
Max. load	1000 Ω
Linearization	9 points
Programming	Freely scaleable on full range
Accuracy	<0.1% of span
Resolution	12 bits

<b>Alarm</b>	1 alarm level selectable
Alarm output	PNP or NPN- transistor, max 28V, 100mA
External relay	use NPN output
Hysteresis	freely selectable
<b>Pulse output: Divider</b>	<b>(Alternative to the alarm)</b> Freely selectable (floating point values).
<b>Pulse output:</b>	PNP or NPN transistor, max 28V, 100 mA
Pulse width	50, 75, 100, 200, 500 or 1000 ms
<b>Power supply:</b>	19..28 VDC, supply current 20..60 mA
<b>Operating temp.</b>	0..60°C
<b>Weight</b>	100 g
<b>Mounting</b>	DIN rail 46277

## How to order:

**6420 - A - B - C**

**A: Input range (Hz)**

**B: Output type**

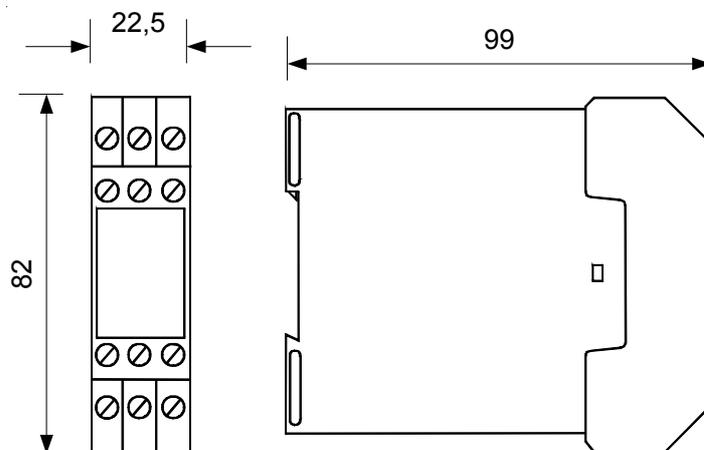
**C: Alarm / Divider**

Alarm=**AL**(low level)/value, **AH**(high level)/value,  
Divider= **D**/value

**For example:** 6420-0/150Hz-4/20 mA-AH/100Hz  
Input range 0..150 Hz, output 4-20 mA,  
High alarm level 100 Hz.

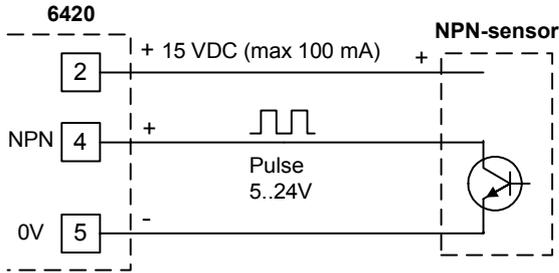
6420 can be delivered according to ordered settings, if programmers are not available.

## Dimensions:

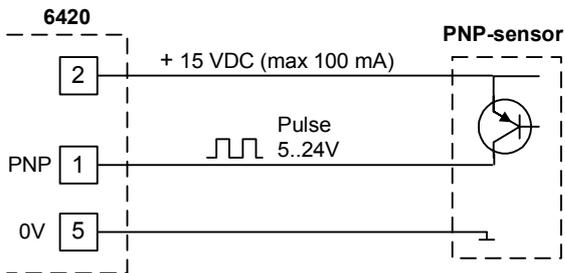


# Terminal connections:

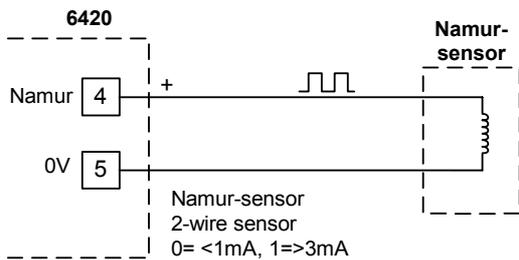
## NPN-sensor



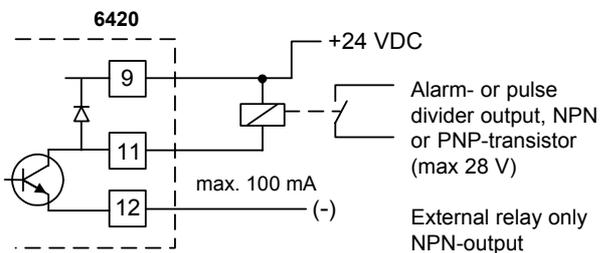
## PNP-sensor



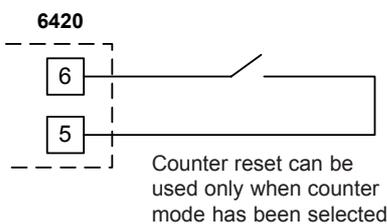
## Namur-sensor



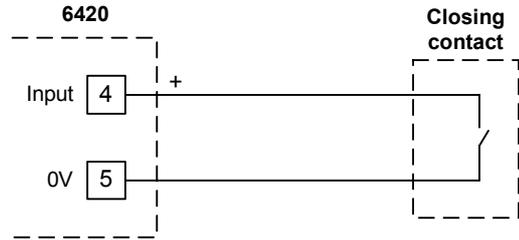
## Alarm relay (NPN)



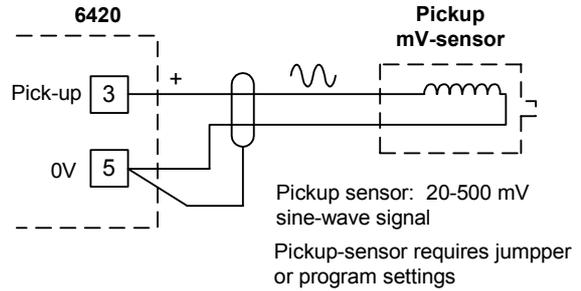
## counter reset



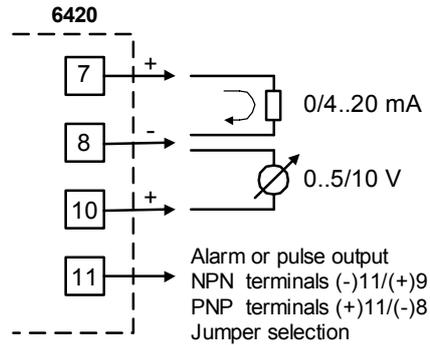
## Closing contact



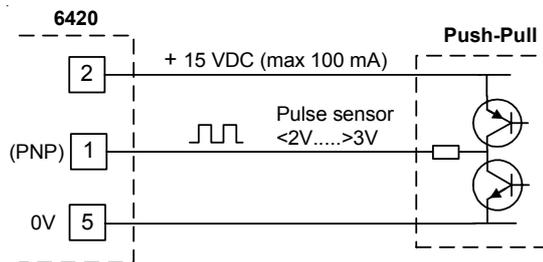
## Pickup-sensor



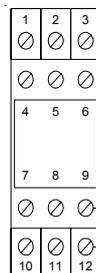
## Output



## Push-Pull sensor



## Power supply



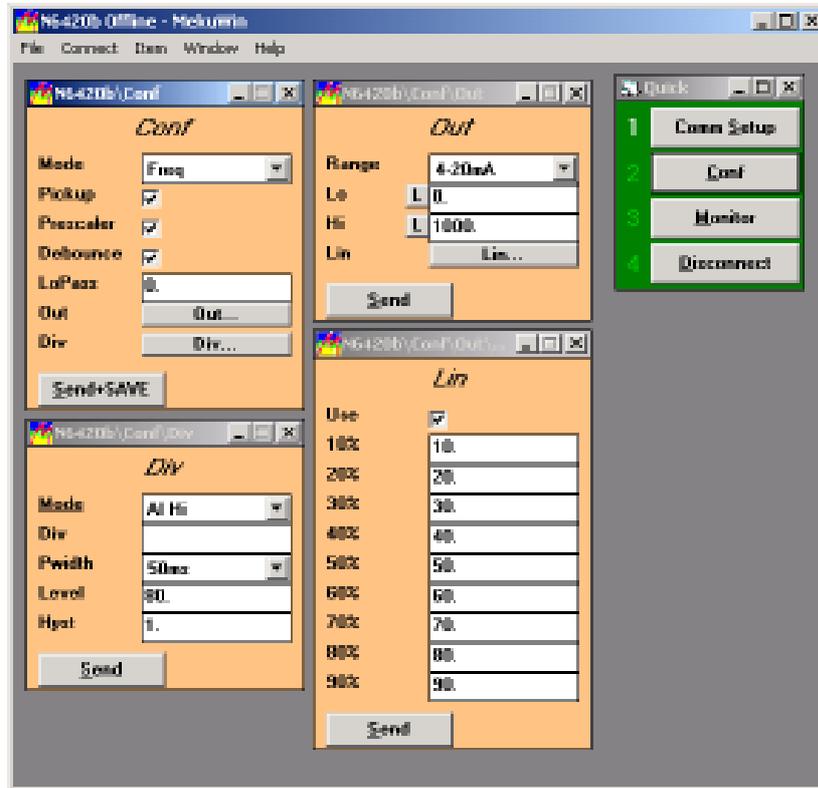
Sensor ground wire (5) is connected to converter power supply (-) terminal (12).

Sensor supply voltage can be taken from converter power supply voltage terminals (9/12).

# MekuWin software

MekuWin is a general purpose configuration software for Nokeval converters/transmitters supporting Meku configuration language. It differs from conventional configuration programs so that the menu structure (it is, the things there are to configure) is not fixed, but

is loaded from the converter being configured. In this way, there is no need to update MekuWin every time there is a new converter or a new feature is added to an existing product.



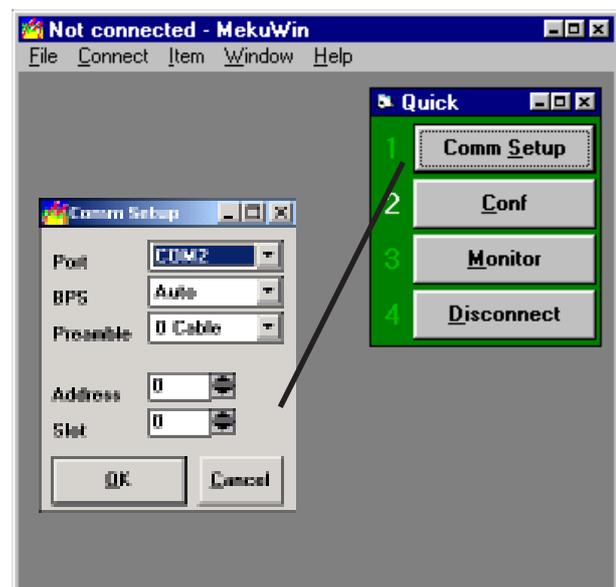
## Preparing:

Use cable POL-RS232 to connect the pulse converter to a PC serial port. Don't forget to provide supply voltage 24V for the converter.

Launch MekuWin. When launching for first time, the Comm setup window is shown. Select your serial port, and set baud rate (BPS) to 9600. Let the other settings be 0. Click OK.

In MekuWin window, there is a handy Quick menu with four buttons. If it is not visible, select Window/Quick at the pulldown menu.

The first button opens the previously explained Comm setup window. But now, use the second button (Conf) to establish a connection to the converter. If it fails, check the Comm setup again, and that you have the supply voltage connected.



MekuWin-software comm-setup selection

# Configuration

## Conf menu

The configuration menu is divided to several menus to clarify it. When you use the Conf button in the quick menu, you see the configuration main menu. It is used to set parameters associated with the input (frequency or count). Additionally there is separate sub-menus for output signal, its linearisation, and divider/alarm output. These are explained later. The menu hierarchy is best illustrated on page 9.



6420 Pulse converter Conf menu window by MekuWin software.

## Mode

6420 can alternatively measure the input signal frequency or count the number of pulses input. For the latter option, see Count mode on page 8.

## Pickup

Several types of sensors can be connected to this converter. The only thing that has to be configured is whether the sensor is a magnetic pickup or not. For NPN, PNP, Namur, and contact sensors, set this option off.

The factory setting is off. However, it is possible to use pickup sensor without a configuration device. Short jumper J3-A to override this setting if you have pickup sensor.

## Prescaler

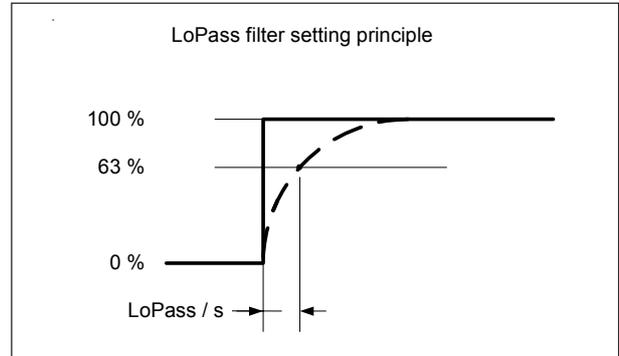
When the prescaler is disabled, the maximum input frequency is 5 kHz. If you need to measure higher frequency (up to 20 kHz), enable the prescaler and the converter will count every fourth input pulse. This does not affect the output scaling as the converter will automatically compensate the prescaling.

## Debounce

If your sensor is of mechanical contact type, use this option to engage a debounce circuitry in the converter that will reject pulses exceeding abt 30 Hz. It is also recommended to use debounce with other sensors when operating on frequencies below 10 Hz to get extra protection against disturbances.

## LoPass

Use this filter to damp the frequency reading in case there are disturbances. Set the time constant in seconds (0=no damping). In one time constant, the output signal will reach 63% of its final change when a sudden change in input frequency has occurred.



## OUT

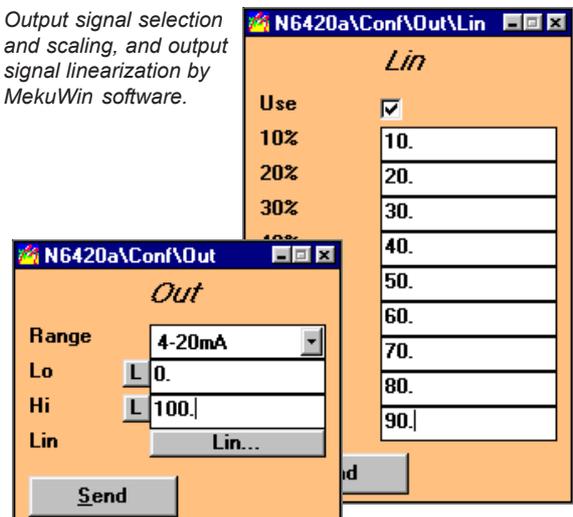
**Range:** Select the output signal range (0..20mA, 4..20mA, 0..5V or 0..10V).

**Lo:** The input frequency (in Hz) that corresponds to minimum output signal (e.g. 4mA).

**Hi:** The input frequency that corresponds to maximum output signal (20mA)

**Lin:** The output signal has not to be linear in respect to the input frequency. You can use Lin menu to adjust the output signal in nine points (10,20..90%). The extremes (0% and 100%) are set using Lo and Hi in the Out menu. Use the Use option to enable the linearisation.

Output signal selection and scaling, and output signal linearization by MekuWin software.



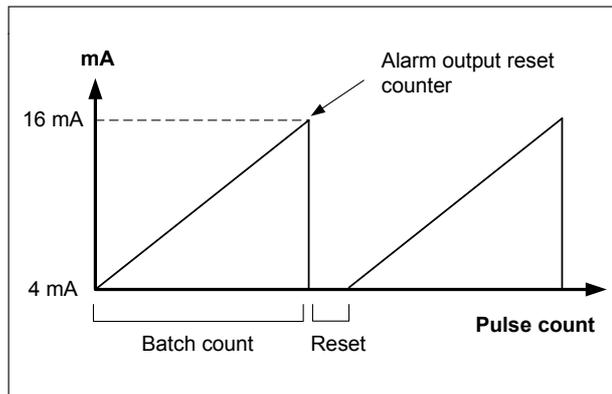
- DIV** This sub-menu is used to control the divider/alarm output.
- Mode:** Select the desired mode of operation:  
**Off** = divider output not used  
**Divider** = divider mode  
**AI Lo** = low alarm mode  
**AI Hi** = high alarm mode
- Div:** The amount of input pulses after which the output will give a pulse. The divider has not to be an integer. If you use divider value 3.5, the output will give a pulse alternately between 3 and 4 input pulses.
- Pwidth:** The divider output pulse width. Options are 50, 75, 100, 200, 500, and 1000 ms.
- Level:** Alarm level. When the input frequency or count exceeds (high alarm) the level set, the alarm output will activate.
- Hyst:** When the alarm has activated, the input frequency must decline below the alarm level by the Hyst value to be deactivated.



Pulse output and alarm settings by MekuWin software.

## Count mode

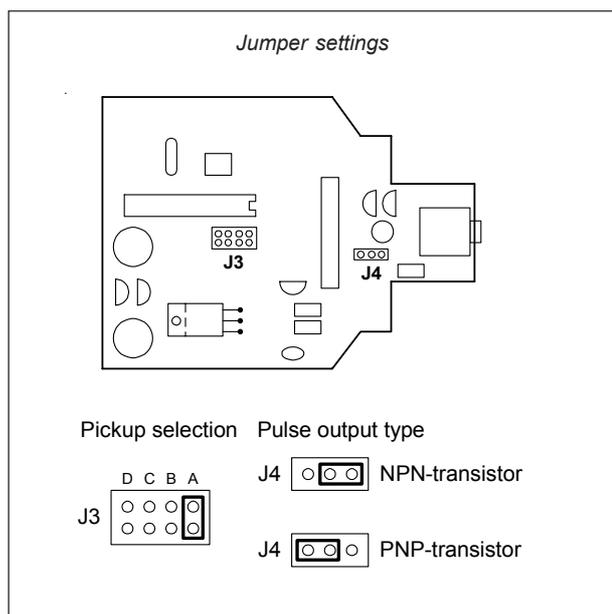
The converter can be used as a simple batch controller using the count mode and the alarm output. The output scaling (Lo and Hi in the Out menu) is done for the pulse count, e.g. Lo=0 and Hi=100 000 pulses, and the same applies for the alarm level (Div menu). The counter can count 4 billion counts maximum. Use an external contact to reset the count.



## Jumper settings

The divider/alarm output can be either NPN or PNP type. Use jumper J4 to select. Factory setting NPN. When driving a relay or electromechanical counter, use NPN output since it is protected with a freewheel diode.

If using a pickup sensor and you don't have a configuration device available, you can enable the pickup input by shorting jumper J3-A. After this, the software Pickup selection is overridden.



# Hand-Held Programmer 6790

Nokeval 6790 hand-held programmer is the alternative way to configure the converter. As being battery-powered, it is especially handy in the field. You see the same menu structure as with MekuWin software. Like MekuWin, 6790 can be used for every Nokeval converter/transmitter supporting Meku language.

## PREPARING

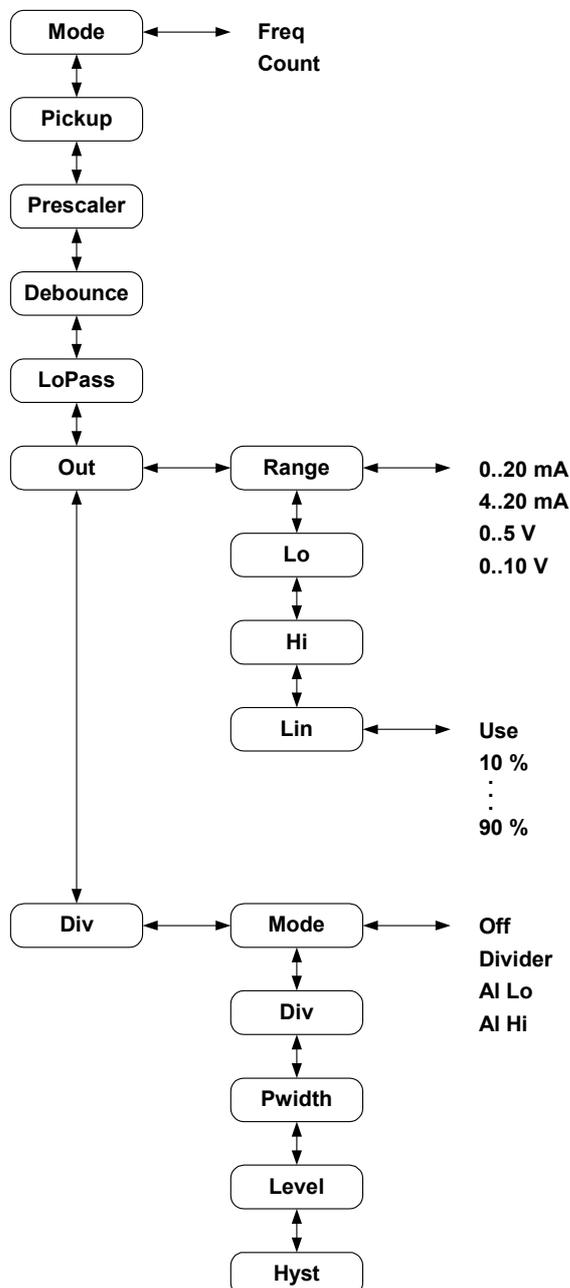
Supply 24V to the converter. Connect 6790 programming cable to the converter Prog connector.

Power 6790 up by pressing ► key. If necessary, select Baud=9600 or Auto. Select Conn and push ► to connect. If it succeeds, the 6790 starts to indicate the current input frequency of the converter, this is called monitoring.

To configure the converter, press **Conf** key for one second. The first configurable item (Mode) will appear in the display. Select the item you want to set, push ► to start editing, edit with ▲ ▼ ► and exit with ★. Configure all items, and finally push ★ to exit to Save/Undo stage. Push ► to save the changes and return to monitor stage.

Before disconnecting the cable, please close the connection by pressing ★ for one second (Conn displayed, ready for a new connection). Power off by pressing ★ again.

## Conf-menu



## Conf-menumen asetuskset:

**Mode:** operating mode (Freq / count )

**Pickup:** if pickup sensor used (yes / no)

**Prescaler:** prescaler selection (yes / no)

**Debounce:** eliminate debounce (yes / no)

**LoPass:** lopass filter damps the reading (tc in seconds)

**Out:** output selection

**Range:** output type 0/4..20mA or 0..5/10 V

**Lo:** minimum frequency

**Hi:** maximum frequency

**Lin:** output signal linearisation selection

**Use:** linearisation used (yes / no).

**10%..90 %:** linearisation selection in 9 point

**Div:** Pulse divider or alarm settings

**Mode:** select to use sought-after function

**Off:** not used

**Divider:** divider mode

**AI Lo:** low alarm mode

**AI Hi:** high alarm mode

**Div:** divider value setting

**Pwidth:** divider output pulse width: 50, 75, 100, 200, 500 or 1000 ms

**Level:** alarm level

**Hyst:** alarm hysteresis

**Notes:**

**Notes:**

# ***Nokeval***

Nokeval Oy                      Tel.    +358 3 342  
4800  
Yrittajakatu 12 Fax.    +358 3 342 2066  
37100 NOKIA email    sales@nokeval.com  
FINLAND                      http://  
www.nokeval.com