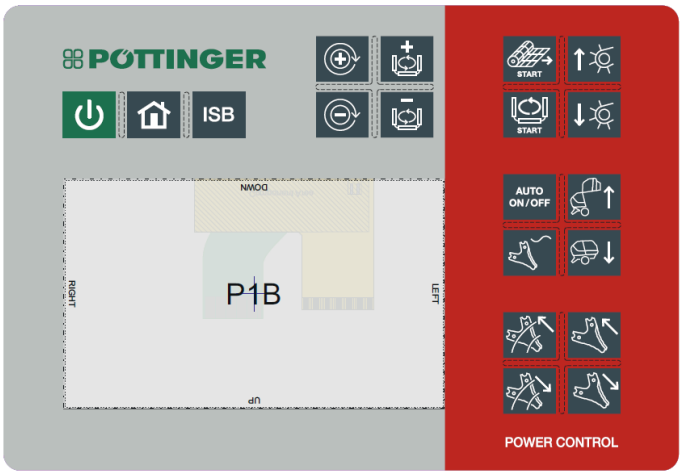
EN **Manual for Operator Terminal**

Power Control 3.0

Pöttinger Material Nr.: 487.760, 487.779, 487.793

V1.1



Changes

Version	Change	Date	Sign
V1.0	First Version	20.01.2021	bumbrai
V1.1	New System-Menu navigation, add input field UT instance add input field summer/wintertime, 12h/24h Mode N	11.02.2022	bumbrai

Approved:

Created:		**Checked:**	**Approved:**
Date	06.11.2018	Date	Date
Sign	Bumberger	Sign	Sign

content

1 Therms and abbrevations

Therm	Meaning
ECU	Electronic control unit
Nd	not defined
tbd	to be defined

2 Hardware deskription

2.1 Operation Voltage capability:

Typical 12V DC (from tractor)
- Preferred: 8 .. 28V DC
- Minimum: 8 ..18V DC,

2.2 TFT Display:

Size: 5”, built in landscape direction
o Resolution: 800 x 480 dot matrix
o Colors: 64k
o Backlight LED

2.3 Front foil:

Keyboard backlight dimming, controlled by 8 steps
UV resistant front foil material

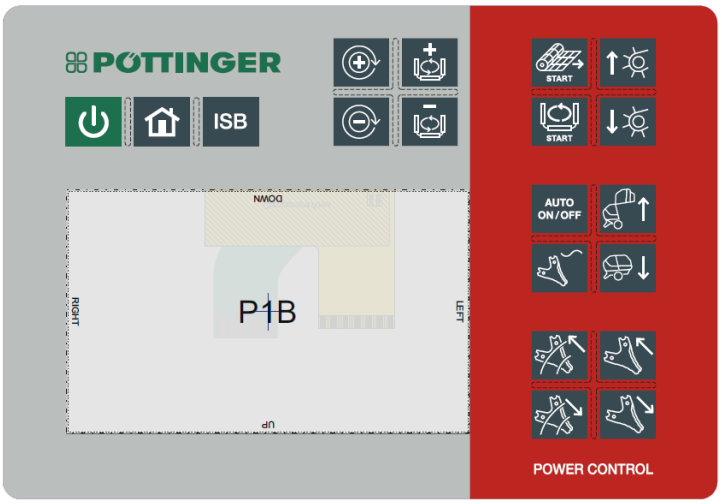
2.4 Buzzer:

o built into rear side,
o 60dB @30cm distance (Angel <=10° from center)
o Fix frequency of the buzzer, (rated frequency: 4.25kHz).
o Volume controlled by 16 steps. Fine loudness control is not possible because of the internal oscillator. The reduced volume depends on the ambient temperature, too.
o IP65 sealed by the case, the component (buzzer) is not IP protected.

2.5 RTC:

Real time clock with removable/ exchangeable Lithium battery: Battery CR2032
o typical lifetime of the battery: 10 years from production (depends on the ambient temperature)
o replace by opening of the screwed housing.

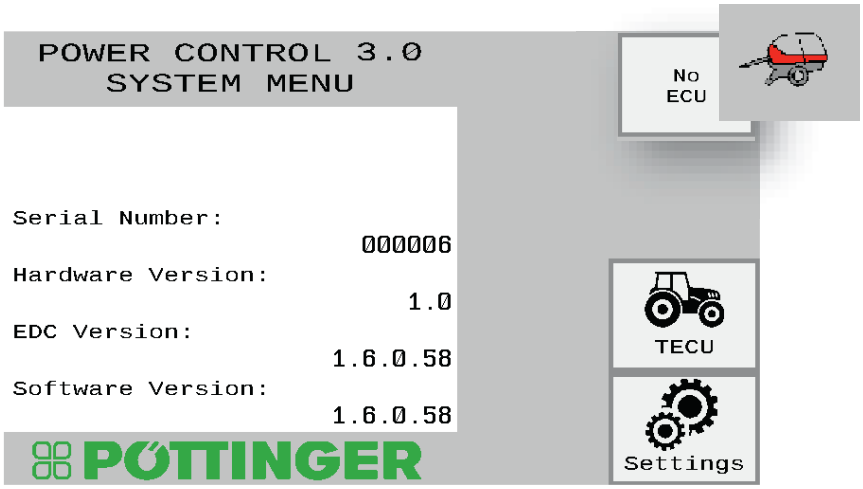
3 User Interface



3.1 Hardkey Button behaviour

- Power ON/Off: press 1 sec for switch ON/OFF
- House Button: Jump Back to System start menu
- ISB: ISOBUS shortcut button: Stop all ISOBUS functions
  ISO11783 ISB function support
- 16 Hardkeys: The printing belongs to the machine function (e.g. baler, seeder, loader wagon, mower,…)

3.2 System Menu



Buttons:

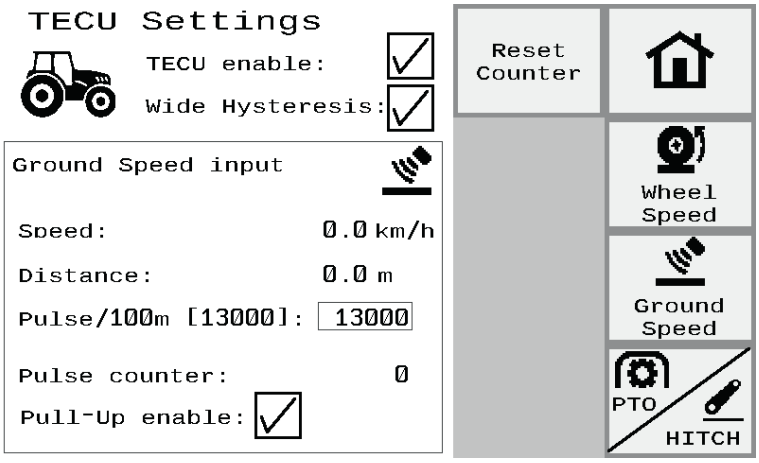
- No ECU If a machine is connected: go to machine view
- TECU Go to TECU functions
- Settings Terminal specific settings

Information view:

- Serial Number
- Hardware Version
- EDC Version
- Software Version

3.3 TECU Menu

3.3.1 Base Settings



TECU enable Enable/Disable the TECU functions. (restart of the terminal needed)
If the terminal is connected to a ISOBUS tractor, **the TECU has to be disabled!** Here the TECU information's shall come from the tractor.

Wide Hysteresis: Needed for some tractor interfaces, if they have different signal levels. Default is ON. If the TECU won't work properly, change to OFF.

Buttons:

House Go to Start Menu

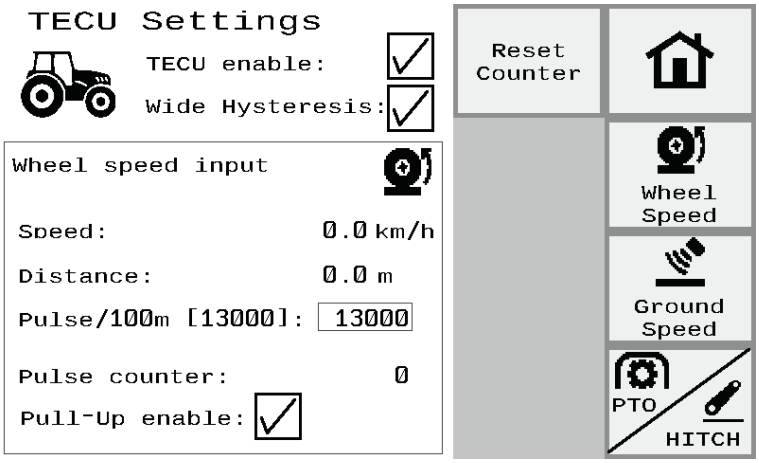
Wheel Speed Go to settings of the Wheel Speed

Ground Speed Go to settings of the Ground Speed

PTO Hitch Go to settings of the PTO and Hitch

3.3.2 WBS Wheel Based Speed

Mainly this signal is generated in the gearbox of the tractor. This is the theoretical speed of the tractor, because the slip of the wheels is not measured here. Higher accuracy is available with the GBS Ground Based Speed



Speed: measured wheel speed

Distance measured wheel distance. Can be reset with the button 'RESET COUNTER'

Pulse/100m Number of Pulses over a distance of 100m.

Default 13.000 Pulses

If the accuracy of the speed signal is not valid to the real speed,

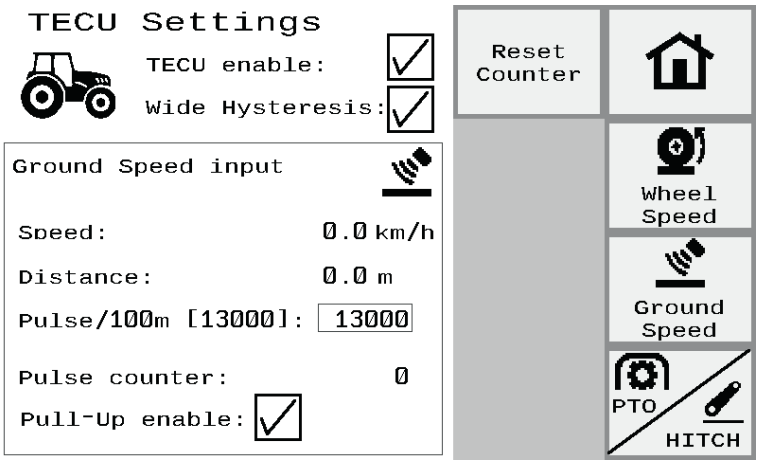
a 100m calibration has to be initiated,

see 100m calibration for wheel and ground based speed

Pulse counter direct counter of the raw signal of the signal connector

3.3.3 GBS Ground Based Speed

Mainly this signal is generated from a radar sensor, mounted under the tractor. This is the real speed of the tractor without slip of the wheels. The speed is here measured directly over the ground surface.



Speed:	measured ground speed
Distance	measured ground distance. Can be reset with the button ‘RESET COUNTER’
Pulse/100m	Number of Pulses over a distance of 100m. Default 13.000 Pulses If the accuracy of the speed signal is not valid to the real speed, a 100m calibration has to be initiated, see 100m calibration for wheel and ground based speed
Pulse counter	direct counter of the raw signal of the signal connector

3.3.4 100m calibration for wheel and ground based speed

If the accuracy of the speed signal is not valid to the real speed, a 100m calibration has to be initiated.

Pulse/100m	Number of Pulses over a distance of 100m. Default 13.000 Pulses

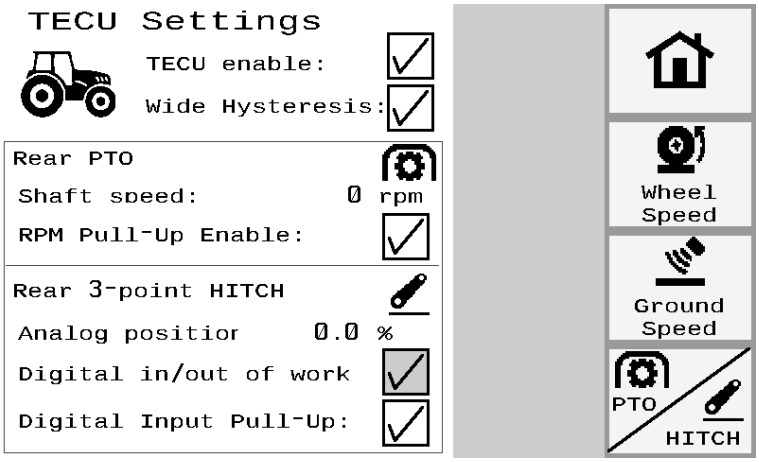
Procedure
To calibrate the speed sensor:

1. The terminal is connected to the tractor signal socket.

2. Measure and mark a distance of 100m. The soil must correspond to the field conditions. The distance should therefore lead over a meadow or a field.
3. Position the tractor with connected implement at the beginning of the marked distance.
4. Press the button 'RESET COUNTER', the distance and Pulse counter value is now '0'
5. Drive along the marked distance of 100m and stop.
6. Take the value of the pulse counter and write this value into the field: Pulse/100m
7. The speed sensor is now calibrated.

8. Test calibration:
   'RESET COUNTER' again and drive a second time along the 100m path and check the measured distance, this value should now correspond to the 100m.

3.3.5 PTO and Hitch settings



Rear PTO

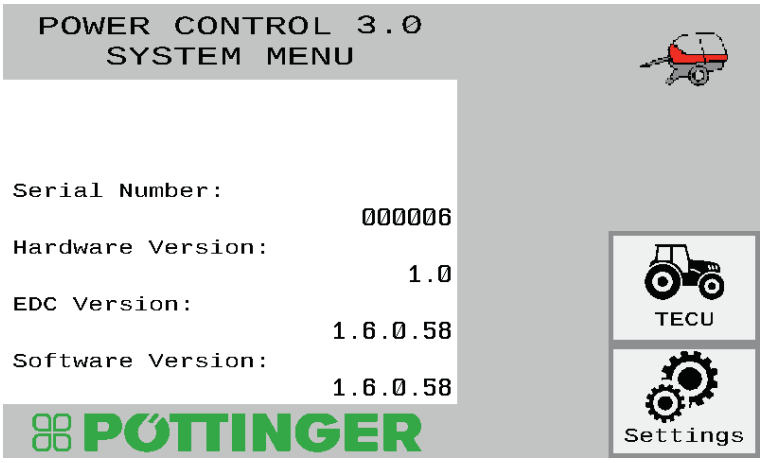
Shaft speed	Actual speed value of the shaft in rpm
RPM Pull-Up enable:	If the signal value of the tractor is not in the standard area, this setting can be disabled. Default value is ON

Rear 3-Point HITCH

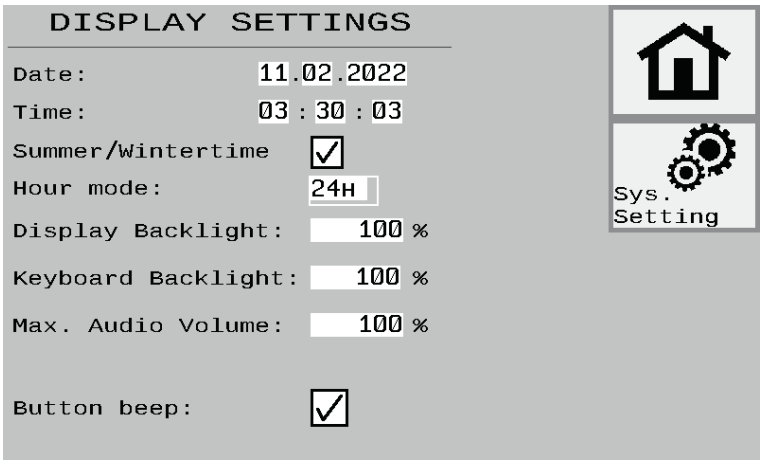
Analog Position	Actual position value of the hitch in %
Digital in/out of work	Digital signal of the hitch. Lifting the hitch over a certain limit, the signal gets to OFF Lowering the hitch over a certain limit, the signal gets to ON This certain limit should be described in the tractor manual.
Digital Input Pull-Up:	If the signal value of the tractor is not in the standard area, this setting can be disabled. Default value is ON

3.4 System Settings

System menu

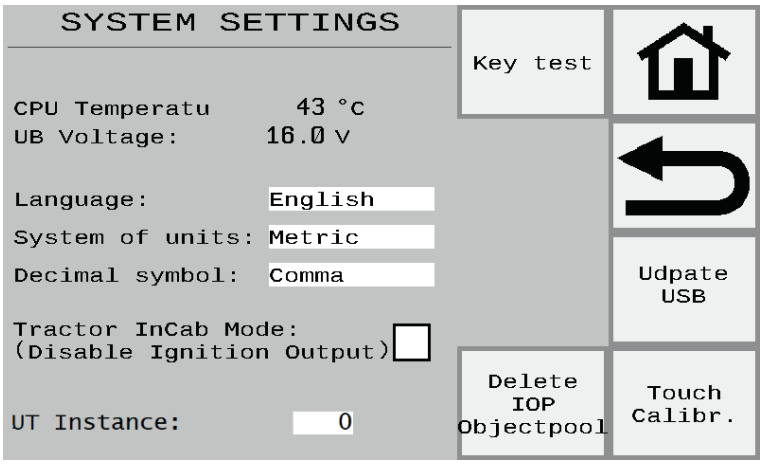


Display Settings



Beep for Keypress enable/disable acoustic signal when a button is pressed

System Settings



Temperature Temperature inside the terminal
UB Voltage Measuring of the actual voltage

Tractor InCab Mode If Terminal is connected via the inCab connector of a tractor, this function should be enabled.

Default: OFF

IMPORTANT: Using the PÖTTINGER Tractor cable and this option is enabled, the implement won't start!

UT Instance Default: 0

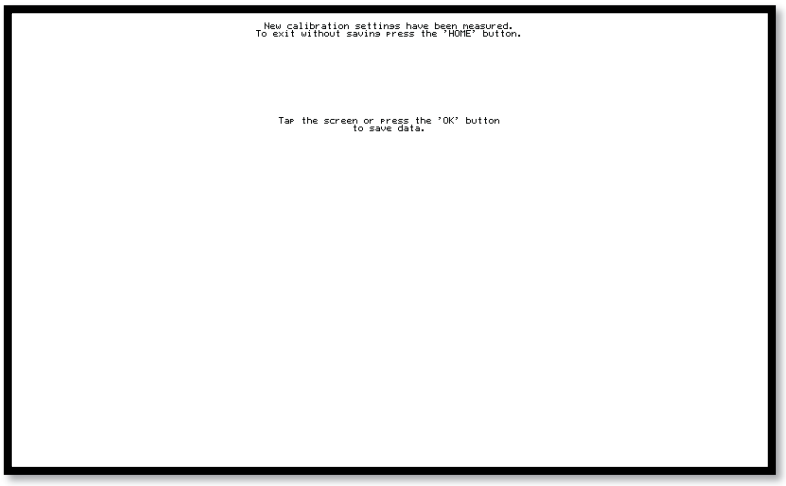
For using more than one ISOBUS Terminals. Only one terminal is allowed to have instance 0, the second Terminal needs to be changed to 1.

Softkeys:

- Update USB - Developer cable is needed
- Touch Calibration
- Key Test
- Delete IOP Objectpool

3.4.1 Touch calibration

Follow the instructions on the display. Press the shown cross symbols until the procedure is finished.



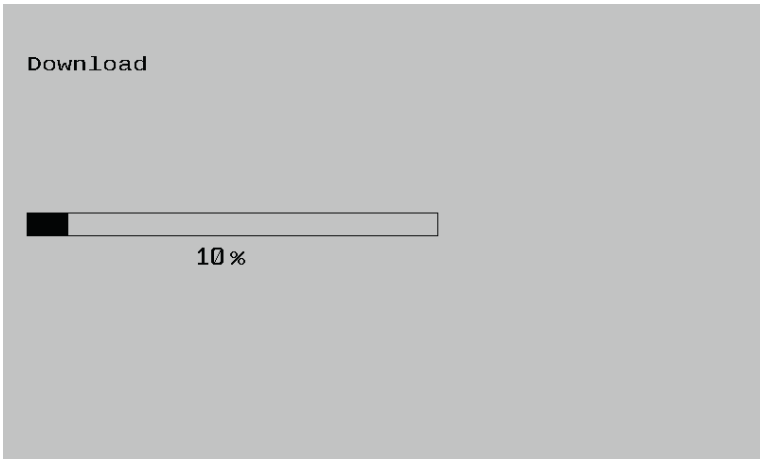
3.4.2 Delete IOP Objectpool

Pressing the button ‘Delete IOP Objectpool’ will delete all stored Opjectpools in the terminal memory.

After a restart and reconnection of an implement, the objectpool download will start automatically.

3.4.3 IOP Objectpool Download

After connection of an implement, the objectpool download will start automatically.



If there is an error during download, check the connections and power supply.


ERROR!
Error during download!

4 Electrical connectivity

Physical interface:
o A: M12-8pol male Main Connector to implement
o B: M12-8pol female To signal connector of the tractor

4.1 Pinout

- M12-8pol male pinning:

PIN	Signal
1	Power Supply KL30 (+12V)
2	USB-Data +
3	Ignition In/Out (max 0,5A)
4	USB-Data -
5	CAN-L
6	Power Supply KL31 (GND)
7	CAN-H
8	USB +5V

- M12-8pol female pinning:

PIN	Signal
1	RS-232_TX
2	Tractor speed Input_0
3	Tractor speed Input_1
4	RS-232_RX
5	Rear PTO speed Input
6	Three-point Digital Input
7	Power Supply KL31 (GND)
8	Three-point analog Input

4.2 Main Connector

Connection cable to implement (to 9-pole ISOBUS InCab Connector)

476.282	Adapterkabel AMP 9

5 TECU Tractor ECU

5.1 Tractor side pin allocation

A seven-pin female bulkhead connector shall be mounted on the tractor with the following pin allocation:

— Pin 1: true ground speed

— Pin 2: theoretical ground speed

— Pin 3: rear PTO rotational speed

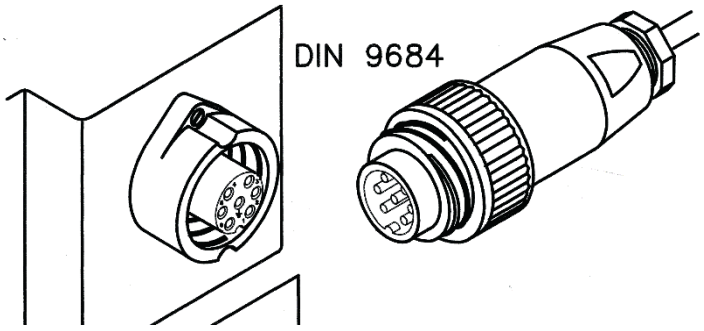
— Pin 4: rear three-point implement in-work/out-of-work

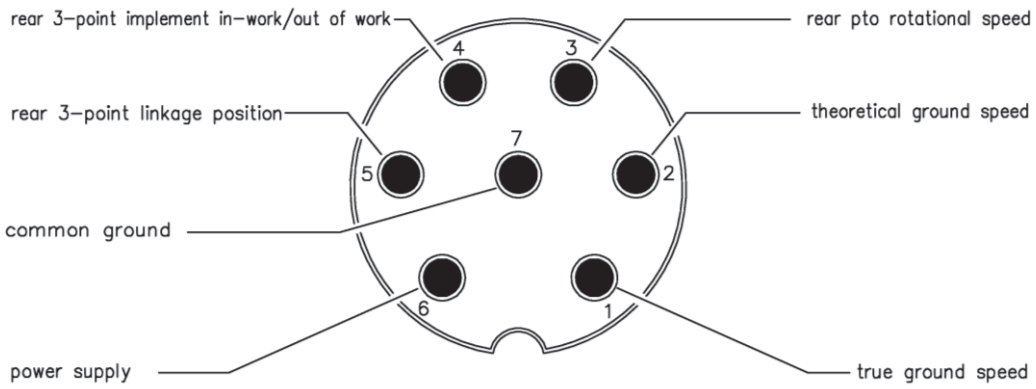
— Pin 5: rear three-point linkage position

— Pin 6: power supply

— Pin 7: common ground

5.1.1 7-pole in-Cab signal connector ISO 11786





Connection to the 7-pole in-Cab signal connector DIN 9684

ISO 11786 (Agricultural tractors and machinery - Tractor mounted sensor interface)

5.2 Terminal side pin allocation

Connection Cable to 7-pole in-Cab connector:

PÖTTINGER No.:

476.374	Adapterkabel Amph.7pol P 2m M12 8pol PC 3.0<->Signalstd.

- M12-8pol female pinning:

PIN	Signal
1	RS-232_TX
2	Tractor speed Input_0
3	Tractor speed Input_1
4	RS-232_RX
5	Rear PTO speed Input
6	Three-point Digital Input
7	Power Supply KL31 (GND)
8	Three-point analog Input

5.2.1 Tractor speed Input: 2 inputs ISO11786:1995 compliant :

- A 4700 ohm pull-up resistor, that can be enabled/disabled, to the power input voltage,
- Approximately 15000 ohm input impedance to ground with pull-up resistor disabled.
- Two input modes with different levels for low and high with hysteresis:
- MODE 1: High level 3420mV, Low level 2540mV
- MODE 2: High level 6280mV, Low level 1520mV
- Accuracy 2% of mode levels
- Default setting (by system menu) : Mode 1
- Protection
- Protected against shortcut
- Protected against shortcut to power
- Part of the M12 8-pole female connector

5.2.2 Rear PTO speed Input: 1input ISO11786:1995 (chapter 5.3) compliant:

- A 4700 ohm pull-up resistor, that can be enabled/disabled, to the power input voltage,
- Approximately 15000 ohm input impedance to ground with pull-up resistor disabled.
- Two input modes with different levels for low and high with hysteresis:

- MODE 1: High level 3420mV, Low level 2540mV
- MODE 2: High level 6280mV, Low level 1520mV
- Accuracy 2% of mode levels
- Default setting (by system menu) : Mode 1
- The signal shall be a square wave with a duty cycle between 20 % and 80 %, and with rise and fall times less than 1 ms
- At rotational speeds greater than 2 r/s, the speed shall be represented by 6 pulses per revolution (6 Hz/r/s).
- Protection
- Protected against shortcut
- Protected against shortcut to power
- Part of the M12 8-pole female connector

5.2.3 Three-point Digital Input: 1input ISO11786:1995 (chpt. 5.4) compliant :

- Electrical properties:
- Signal levels: In-work signal: voltage less than 1.5 V Out-of-work signal: greater than 6.3V
- Source impedance at the in-work position: shall be 100 ± 10 Ohm
- Load impedance: greater than 3 kOhm
- Internal pull up for passive signa sources: switchable by software (System Menu). This function is not part of the related standard.
- Protection
- Protected against shortcut
- Protected against shortcut to power
- Part of the M12 8-pole female connector

5.2.4 Three-point analog Input: 1input ISO11786:1995 chapter 5.5 compliant :

- Electrical properties of Linkage position input
- Voltage range: 0..10V
- Accuracy: better than 0.5% within the voltage range
- Load impedance: greater than 3 kOhm
- Protection
- Protected against shortcut
- Protected against shortcut to power
- Part of the M12-8pol female connector

5.2.5 Ignition In/Output: 1 channel In/output

- Output mode:
- max output current: 0.5A (high side switch)
- no freewheeling for inductive loads
- off delay setting by user PGN
- Input mode:
- Terminal able to start when connected to power (+12V) Cannot be use the Output mode together with the Ignition Input function!

- Forced boot mode: negative voltage connected (between -5 to -12V). (USB to RS232 update cable can be ordered.)
- Protection
- Protected against shortcut
- Protected against shortcut to power

Part of the M12-8pol male connector

5.3 EMC

5.3.1 EN ISO 14982:2009

Agricultural and forestry machinery -- Electromagnetic compatibility -- Test methods and acceptance criteria

5.4 ESD

5.4.1 EN ISO 10605

Test level ±6 kV for all pins for contact discharge.

Test level ±8 kV for all pins for air discharge.

DE Im Zuge der technischen Weiterentwicklung arbeitet die PÖTTINGER Landtechnik GmbH ständig an der Verbesserung ihrer Produkte.

Änderungen gegenüber den Abbildungen und Beschreibungen dieser Betriebsanleitung müssen wir uns darum vorbehalten, ein Anspruch auf Änderungen an bereits ausgelieferten Maschinen kann daraus nicht abgeleitet werden.

Technische Angaben, Maße und Gewichte sind unverbindlich. Irrtümer vorbehalten.

EN Following the policy of the PÖTTINGER Landtechnik GmbH to improve their products as technical developments continue, PÖTTINGER reserve the right to make alterations which must not necessarily correspond to text and illustrations contai-ned in this publication, and without incurring obligation to alter any machines previously delivered.

Technical data, dimensions and weights are given as an indication only. Responsibility for errors or omissions not accepted.

ES La empresa PÖTTINGER Landtechnik GmbH se esfuerza contínuamente en la mejora constante de sus productos, adaptándolos a la evolución técnica. Por ello nos vemos obligados a reservarnos todos los derechos de cualquier modificación de los productos con relación a las ilustraciones y a los textos del presente manual, sin que por ello pueda ser deducido derecho alguno a la modificación de máquinas ya suministradas.

Los datos técnicos, las medidas y los pesos se entienden sin compromiso alguno.

FR La société PÖTTINGER Landtechnik GmbH améliore constamment ses produits grâce au progrès technique.

C'est pourquoi nous nous réser-vons le droit de modifier descriptions et illustrations de cette notice d'utilisation, sans qu'on en puisse faire découler un droit à modifications sur des machines déjà livrées.

Caractéristiques techniques, dimensions et poids sont sans engagement. Des erreurs sont possibles.

IT La PÖTTINGER Landtechnik GmbH è costantemente al lavoro per migliorare i suoi prodotti mantenendoli aggiornati rispetto allo sviluppo della tecnica.

Per questo motivo siamo costretti a riservarci la facoltà di apportare eventuali modifiche alle illustrazioni e alle descrizioni di queste istruzioni per l'uso. Allo stesso tempo ciò non comporta il diritto di fare apportare modifiche a macchine già fornite.

I dati tecnici, le misure e i pesi non sono impegnativi. Non rispondiamo di eventuali errori. Ristampa o traduzione, anche solo parziale, solo dietro consenso scritto della

NL PÖTTINGER Landtechnik GmbH werkt permanent aan de verbetering van hun producten in het kader van hun technische ontwikkelingen. Daarom moeten wij ons veranderingen van de afbeeldingen en beschrijvingen van deze gebruiksaanwijzing voorbehouden, zonder dat daaruit een aanspraak op veranderingen van reeds geieverde machines kan worden afgeleid.

Technische gegevens, maten en gewichten zijn niet bindend. Vergissingen voorbehouden.

PT A empresa PÖTTINGER Landtechnik GmbH esforçase continuamente por melhorar os seus produtos, adaptando-os à evolução técnica.

Por este motivo, reservamonos o direito de modificar as figuras e as descrições constantes no presente manual, sem incorrer na obrigação de modificar máquinas já fornecidas.

As características técnicas, as dimensões e os pesos não são vinculativos.

PÖTTINGER
Landtechnik GmbH
Industriegelände 1
A-4710 Grieskirchen
Telefon: +43 7248 600-0
Telefax: +43 7248 600-2513
e-Mail: info@poettinger.at
Internet: http://www.poettinger.at

PÖTTINGER Deutschland GmbH
Servicecenter Deutschland Nord
Steinbecker Str. 15
D-49509 Recke
Telefon: +49 5453 911 4-0
e-Mail: recke@poettinger.at

PÖTTINGER Deutschland GmbH
Servicecenter Deutschland Süd
Justus-von-Liebig-Str. 6
D-86899 Landsberg am Lech
Telefon: +49 8191 9299-0
e-Mail: landsberg@poettinger.at

Pöttinger France S.A.R.L.
129 b, la Chapelle
F-68650 Le Bonhomme
Tél.: +33 (0) 3 89 47 28 30
e-Mail: france@poettinger.at