DynamiTech Wireless TP1-IR Touch Probe

Reference Manual

DynamiTech

None

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1. Introduction

The DynamiTech Wired W-A Touch Probe, Wired W-R Touch Probe, and Wireless IR Touch Probe are touch-trigger CNC instruments. The wireless device transmits each stylus deflection by infrared to its receiver, which provides three output wires for signaling the probe status:

- **TOUCH** (yellow wire) — PNP output, active while the stylus is deflected
- **READY** (green wire) — PNP output, active while the probe is in operating mode and ready for measurement
- **BATTERY-LOW** (gray wire) — PNP output, active when the probe battery is low

Each output is set to normally open (NO) or normally closed (NC) on the receiver. Connect the TOUCH wire to the skip input of your machine control.

1.1 Device Variants

DynamiTech produces the following device variants:

VARIANT	DESCRIPTION
TP1-IR	Touch probe with infrared receiver
TP1-W-R	Touch probe with radial cable (TOUCH_NO / TOUCH_NC)
TP1-W-A	Touch probe with axial cable (TOUCH_NO / TOUCH_NC)

See the W-A touch probe, W-R touch probe, or IR touch probe datasheet for measuring performance, electrical limits, environmental ratings, and cable details.

All variants share a common kinematic mechanism and an M4 stylus thread. Variant-specific connections and settings are documented in their respective manuals.

1.2 About This Manual

This manual covers the connections, wiring setup and probe settings for your device variant. Each section includes wire assignments, ratings, and setup steps.

2. Getting Started

2.1 Physical Connections

The receiver has three cable connections:

CONNECTION	WIRES	RATING	DESCRIPTION
Power	Brown VCC, white GND	5–24 V DC	Supply from the machine control
Signal	Yellow TOUCH	PNP, 200 mA max.	Connection to the skip input of the machine control
Status	Green READY, gray BATTERY-LOW	PNP, 200 mA max.	Probe ready and probe battery low, to inputs of the machine control

The output cable of the receiver is 8 m long, 5 × 0.25 mm², with flying leads. Install the receiver inside the machine enclosure with a direct line of sight to the probe, at a distance of up to 5 m.

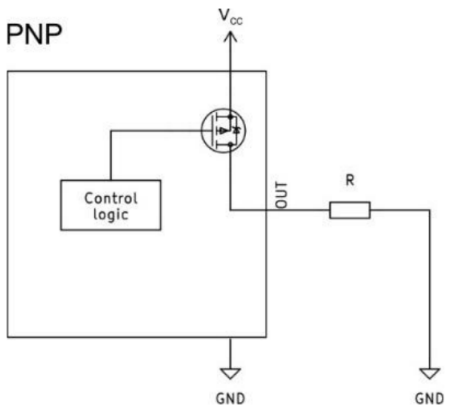
2.2 Connecting via PNP Output

The receiver runs on any 5–24 V DC supply. Connect it, then verify the connection:

- **Connect the supply:** VCC to the positive terminal and GND to the 0 V terminal. The PWR LED of the receiver turns yellow.
- **Verify the connection:** Deflect the stylus. The probe wakes, the receiver responds with TOUCH and READY signals, and the LEDs of the probe and the receiver turn red.

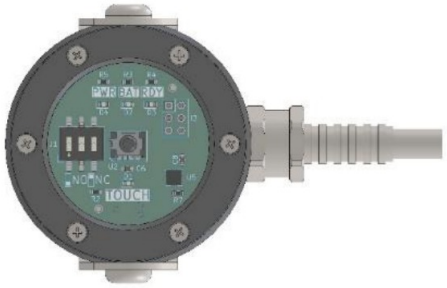
2.3 Output Configuration

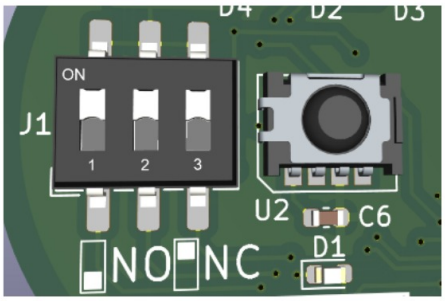
SETTING	VALUE
Output type	PNP
Output function	NO or NC, set separately for each output



All outputs are PNP (sourcing): an output that is on switches VCC to the control input, which is connected between the output and GND. A normally open (NO) output is on while its signal is active; a normally closed (NC) output is off while its signal is active. Do not exceed the maximum output current of 200 mA.

The function of each output is set with its own DIP switch on the receiver board, located under the front glass cover: OFF selects normally open (NO), ON selects normally closed (NC). Unscrew the front glass cover to access the switches. Change the switch positions only with the supply voltage switched off; the receiver reads them at power-up.



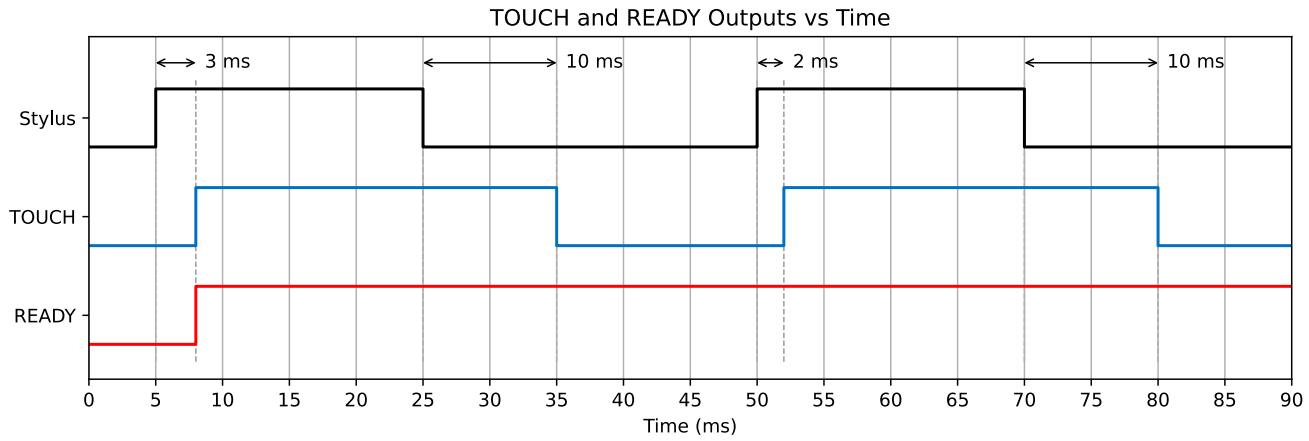


2.4 Wire Assignment

COLOR	SIGNAL	DIP SWITCH
White	GND	-
Brown	VCC	-
Green	READY	1
Yellow	TOUCH	2
Gray	BATTERY-LOW	3

2.5 Signal Timing

The outputs respond to stylus deflection and stylus return with the following delays:



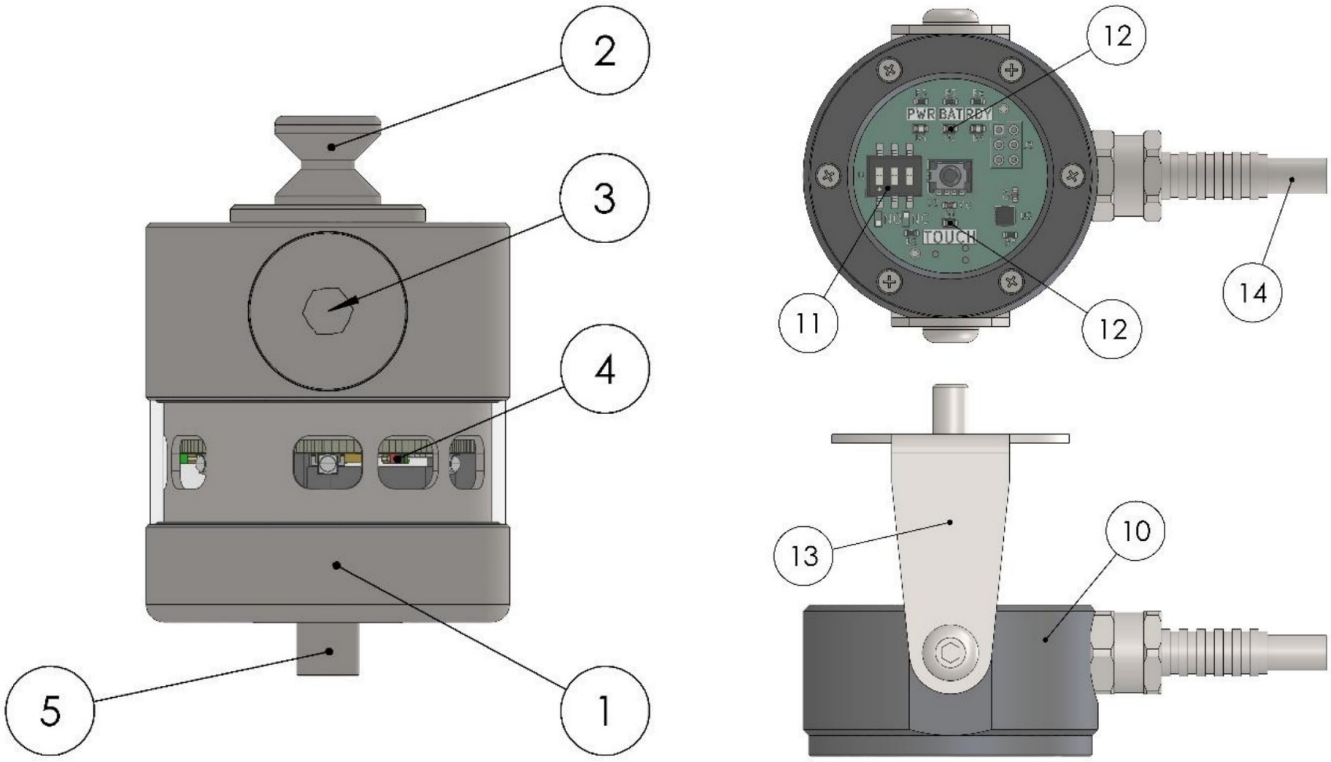
STYLUS EVENT	OPERATING MODE	TOUCH DELAY	READY DELAY	BATTERY-LOW DELAY
Deflection	Standby	3 ms	3 ms	< 70 ms
Deflection	Operating	2 ms	-	-
Return	Operating	10 ms	-	-

When switch-on by touch is enabled (P3 = 1, 3 or 5), the first stylus deflection in standby mode wakes the probe. TOUCH and READY become active after 3 ms and, if the battery is low, BATTERY-LOW becomes active within 70 ms. READY remains active for as long as the probe is in operating mode.

3. Description

3.1 Components

The TP1-IR consists of two units: the probe (transmitter), which transmits the stylus status by infrared, and the receiver, which outputs the signals to the machine control.



3.1.1 Probe

NO.	PART	DESCRIPTION
1	**Probe body**	Houses the kinematic measuring mechanism, the battery and the infrared transmitter; sealed to IP65
2	**Mounting pin**	Ø12h7, at the rear of the probe body; clamped in the Straight Shank or the Mounting Base (see Mounting)
3	**Battery cap**	Seals the battery compartment; 5 mm hex socket (see Battery Replacement)
4	**Status LED**	Indicates the probe status (see Status LEDs)
5	**Stylus mount**	M4 thread for the stylus

3.1.2 Receiver

NO.	PART	DESCRIPTION
10	**Receiver body**	Housing with a glass cover at the front
11	**DIP switches**	One switch per output selects NO or NC; located under the front glass cover (see Output Configuration)
12	**Status LEDs**	Four LEDs: PWR, RDY, TOUCH and BAT (see Status LEDs)
13	**Adjustable bracket**	Supports the receiver; fastened to the machine by its M6 stud
14	**Output cable**	8 m, 5 × 0.25 mm², flying leads (see Wire Assignment)

3.2 Status LEDs

3.2.1 Probe

LED	STATUS
Off	Standby mode
Flashing green	Stylus in rest position
Red	Stylus deflected

3.2.2 Receiver

LED	BOARD LABEL	STATUS
All off	-	No supply voltage
Yellow	PWR	Supply voltage present
Green	RDY	Probe ready for measurement; READY active
Red	TOUCH	Stylus deflected; TOUCH active
Blue	BAT	Probe battery low; BATTERY-LOW active

4. Mounting

The device has two mounting adapters:

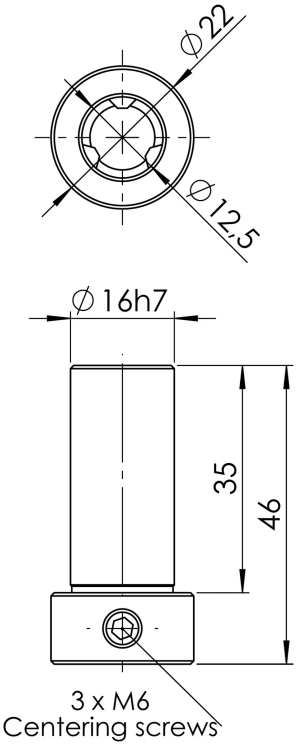
ADAPTER	POSITION	INTERFACE	DESCRIPTION
Straight Shank	Spindle	Ø16h7 shank	Workpiece setup and inspection
Mounting Base	Machine table	2 × M8 screws	Tool length and diameter measurement, broken tool detection

Mount the device using either adapter. The Mounting Base is useful for tool measurement or when checking for broken tools.

4.1 Straight Shank

The Straight Shank holds the device in the spindle.





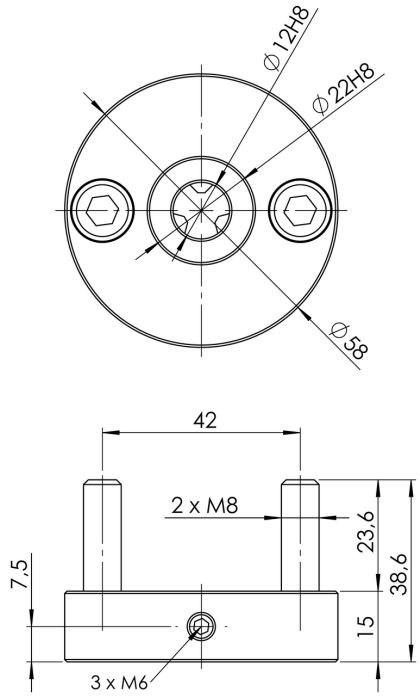
DIMENSION	VALUE
Shank	Ø16h7, 35 mm long
Overall length	46 mm
Collar	Ø22 mm
Bore	Ø12.5 mm
Centering screws	3 × M6

Insert the Ø12 mm mounting pin into the bore and center the stylus tip on the spindle axis with the three centering screws. Tighten the screws to secure the device.

4.2 Mounting Base

The Mounting Base holds the device on the machine table.





DIMENSION	VALUE
Plate	Ø58 mm, 15 mm high
Bore	Ø12H8
Recess	Ø22H8
Mounting screws	2 × M8, 42 mm apart
Clamping screws	3 × M6

Fasten the Mounting Base to the table with the two M8 mounting screws and insert the mounting pin into the bore. Tighten the three M6 clamping screws to secure the device.

5. Operation

5.1 Operating Modes

MODE	DESCRIPTION
Standby	The probe does not transmit. READY is inactive.
Operating	The probe transmits. READY is active. The probe enters this mode by the switch-on method selected with P3 (default: touch).

In this manual, a touch is a single deflection of the stylus. The probe returns to standby mode when the time set with P2 has elapsed since the last touch. Perform measurements only while READY is active.

5.2 Probe Settings

The behavior of the probe is defined by four parameters:

PARAMETER	FUNCTION	VALUES
P1	IR LED power	1 = 20 %, 2 = 40 %, 3 = 60 %, 4 = 80 %, 5 = 100 % (default: 2)
P2	Time to standby after the last touch	1 = 1 min, 2 = 2 min, 3 = 5 min, 4 = 10 min, 5 = 20 min (default: 1)
P3	Switch-on method	1 to 5; see the table below (default: 1)
P4	Number of touches	Read-only; one green LED flash for every 10 000 touches

P3	SWITCH-ON METHOD
1	Touch
2	Spin (approx. 520 rpm, held for 2 s)
3	Touch or spin (approx. 520 rpm, held for 2 s)
4	Spin (approx. 240 rpm, held for 2 s) or tilt (change in orientation of approx. 50°, held for 2 s)
5	Touch, spin (approx. 240 rpm, held for 2 s) or tilt (change in orientation of approx. 50°, held for 2 s)

- **P1** sets the IR LED power. Increase it for a longer transmission distance or for difficult conditions; a higher setting increases the power consumption in operating mode and shortens the battery life. The battery life and transmission range stated in the datasheet apply at the factory default, 40 %.
- **P2** sets the time after the last touch at which the probe returns from operating mode to standby mode.
- **P3** selects the method by which the probe is woken from standby mode.
- **P4** is the number of touches the probe has performed. It is read-only and is indicated by flashes of the green LED, one flash for every 10 000 touches.

P1 to P3 are set with the stylus and confirmed by the LEDs of the probe. No software is required.

5.3 Programming

The parameters are programmed in the order P1, P2, P3. To keep the current value of a parameter, confirm it with a single long touch and continue with the next parameter.

1. Remove the battery. Deflect the stylus and hold it deflected.
2. With the stylus held deflected, insert the battery and screw on the battery cap. The green LED lights.
3. After 2 s, the green LED goes out and the red LED lights. Release the stylus. The green LED lights for 1 s and goes out; the probe is now ready for P1. If the green LED flashes instead, the probe has not entered programming mode: repeat the procedure from step 1.
4. Enter the value as the corresponding number of short touches, each shorter than 0.5 s: three touches for the value 3. The red LED lights while the stylus is deflected.
5. Confirm with one long touch, longer than 1 s. A long touch without preceding short touches leaves the value unchanged.
6. The green LED flashes the value back, three flashes for the value 3, then lights for 1 s and goes out; the probe is now ready for the next parameter.
7. Repeat steps 4 to 6 for P2 and P3.
8. P4 follows P3. To read P4, apply one long touch: the green LED flashes once for every 10 000 touches.

5.4 Battery Replacement

This procedure also applies to commissioning, when the first battery is inserted into a new probe.

Use only a SAFT LS14250 (1/2 AA) lithium battery, 3.6 V / 1.2 Ah.

1. Clean the probe carefully before opening it. Do not use compressed air.
2. Loosen and unscrew the battery cap.
3. Remove the old battery.
4. Clean the sealing surface carefully and dry it with absorbent paper.
5. Insert the new battery, observing the correct polarity.
6. Lightly grease the sealing ring with a suitable grease and screw on the battery cap. Do not deflect the stylus while closing the cap; otherwise the probe enters programming mode.
7. After a few seconds, the probe is ready for use and READY is active.

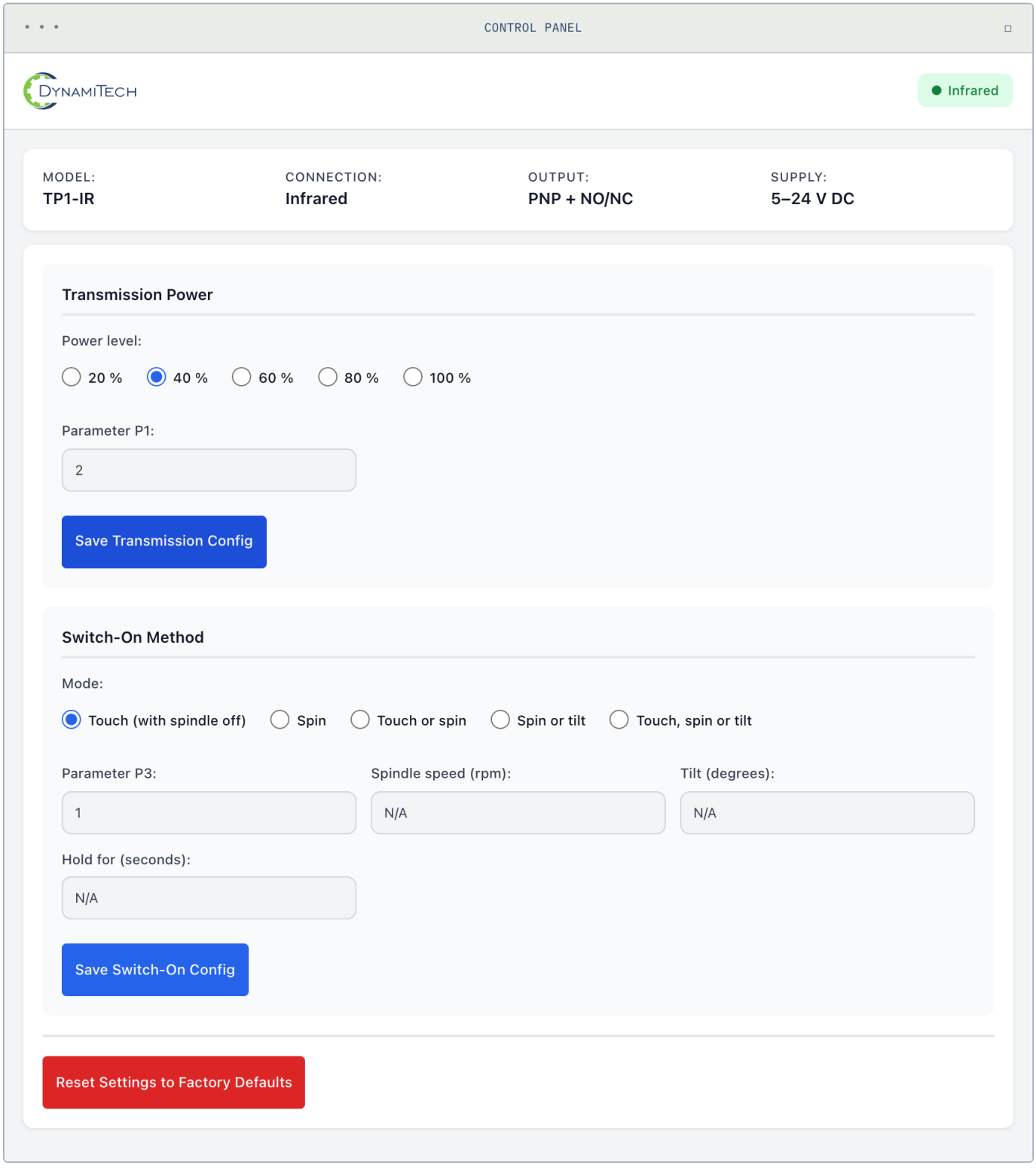
6. Control Panel

6.1 Control Panel Overview

The DynamiTech Control Panel is available on the DynamiTech home page:

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https://dynamitechs.com
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It provides a browser-based graphical interface for setting up the probe settings of the device.


CONTROL PANEL
DynamiTech
Infrared
MODEL:
TP1-IR
CONNECTION:
Infrared
OUTPUT:
PNP + NO/NC
SUPPLY:
5–24 V DC
Transmission Power
Power level:
20 %
40 %
60 %
80 %
100 %
Parameter P1:
2
Save Transmission Config
Switch-On Method
Mode:
Touch (with spindle off)
Spin
Touch or spin
Spin or tilt
Touch, spin or tilt
Parameter P3:
1
Spindle speed (rpm):
N/A
Tilt (degrees):
N/A
Hold for (seconds):
N/A
Save Switch-On Config
Reset Settings to Factory Defaults

6.1.1 Layout

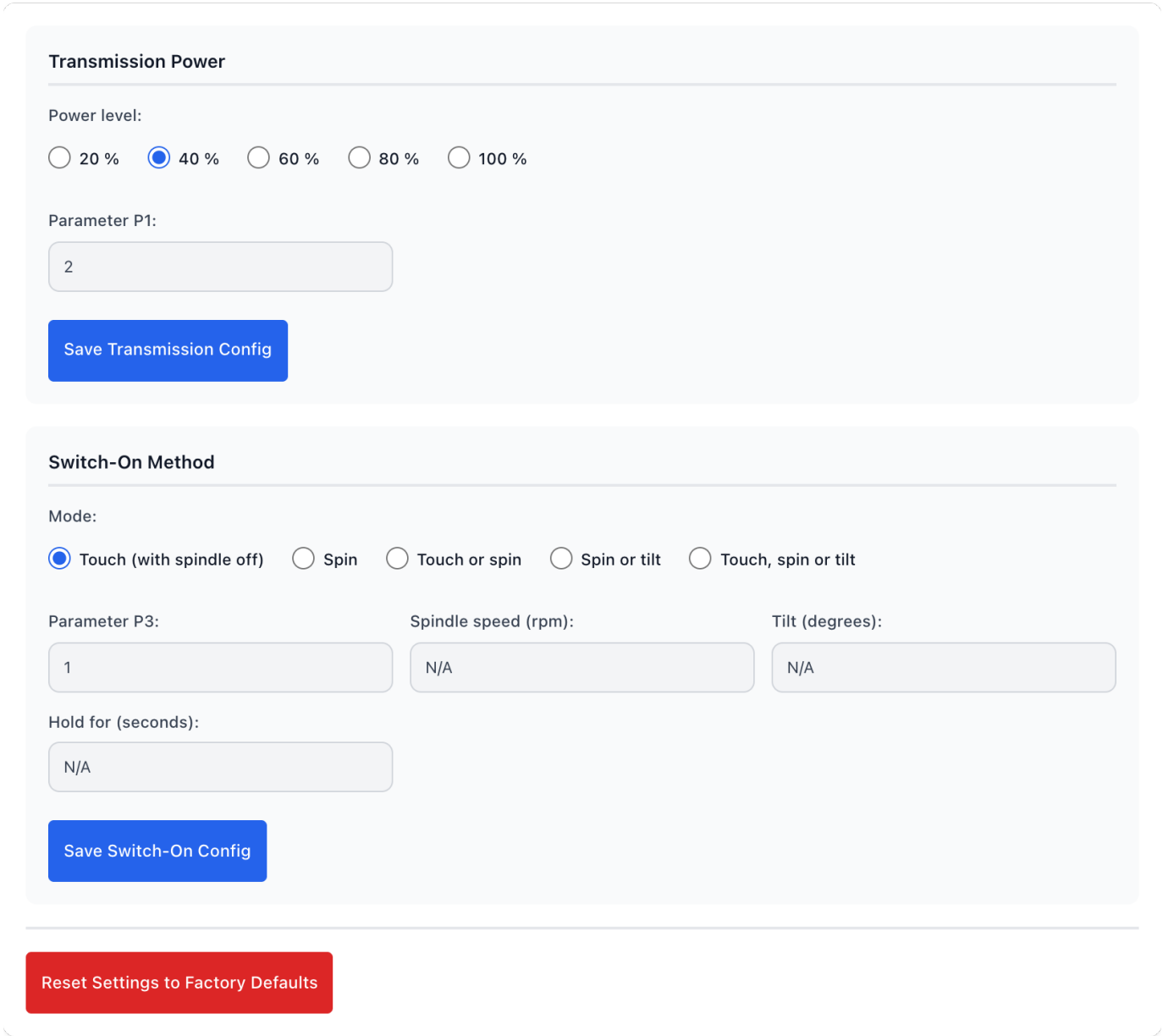
The interface consists of:

- **Tab bar** — Switches between W-A, W-R, and IR setup views
- **Header** — DynamiTech logo and connection type indicator
- **Product information card** — Model, connection type, output, and supply voltage
- **Settings card** — IR LED power (P1) and switch-on method (P3), each with its own save button, and the reset to factory defaults
- **Diagram card** — Below the Settings card; schematic of the probe with the saved IR LED power

6.2 Settings

The **Settings** card displays the values of P1 and P3 that correspond to the selected IR LED power (**Transmission Power**) and switch-on method (**Switch-On Method**). Because the Control Panel does not communicate with the probe, the displayed values must be programmed into the probe with the stylus (see Programming).

Click **Save Transmission Config** or **Save Switch-On Config** to save the selection in the Control Panel; the Diagram card shows the saved IR LED power. Click **Reset Settings to Factory Defaults** to restore both settings to their factory defaults, 40 % and Touch (with spindle off).



6.2.1 Transmission Power

FIELD	DESCRIPTION
Power level	The IR LED power: 20 %, 40 %, 60 %, 80 % or 100 %. The factory default, 40 %, is selected when the page loads.
Parameter P1	The value of P1 for the selected power level: 1 to 5. Read-only.

6.2.2 Switch-On Method

FIELD	DESCRIPTION
Mode	The switch-on method: Touch (with spindle off), Spin, Touch or spin, Spin or tilt, or Touch, spin or tilt. The factory default, Touch (with spindle off), is selected when the page loads.
Parameter P3	The value of P3 for the selected mode: 1 to 5. Read-only.
Spindle speed (rpm)	The spindle speed that wakes the probe: 520 (P3 = 2 or 3) or 240 (P3 = 4 or 5). N/A for a mode without spin.
Tilt (degrees)	The change in orientation that wakes the probe: 50 (P3 = 4 or 5). N/A for a mode without tilt.
Hold for (seconds)	The time for which the spin or tilt must be held: 2. N/A for Touch (with spindle off).

6.3 Diagram

The **Diagram** card, below the Settings card, shows a schematic of the probe with its IR LED and the saved IR LED power. The value is 40 % until another power level is saved.

Diagram

