AZ INSPIRED / SETUP GUIDE

NK105 + Folinn H110T

Air-cooled HQD spindle



Weihong NK105 G3



Folinn H110T

Match the H110T model on the drive label. Ask your technician to verify the cooling fan and confirm the firmware-specific function codes.

Electrical and motion checks are for qualified technicians.

Verify values against the equipment nameplate and the manufacturer manual for the exact model. Record existing settings before making changes.

Jump to a section

Identify the hardware and find the wiring reference — PDF page 2

Find the H110T parameter tables — PDF page 3

Find NK105 setup, commissioning and fault checks — PDF page 4

If your equipment differs, contact AZ Inspired with photos of the model labels.

Folinn H110T VFD + NK105 — Air-Cooled HQD Spindle Setup

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⚠️ **SAFETY FIRST — QUALIFIED PERSONS ONLY.** Mains voltage present. Isolate the VFD and wait 5 minutes for DC-bus capacitors to discharge before touching terminals. For air-cooled spindles, confirm the cooling fan runs freely and the intake is clean. AZ Inspired is not liable for injury or damage from incorrect or unqualified work.

1. Overview

The Folinn H110T (also sold as Hold/Folinn H110 series) is a common VFD for air-cooled HQD spindles up to ~6 kW. With a Weihong NK105 controller the spindle runs in **multi-step terminal mode**, the operator selecting gears S1–S8 from the handle. Air-cooled spindles need clean airflow and a minimum running speed; they tolerate dust poorly, so keep the fan path clear.

2. Required Hardware

Item	Specification
VFD	Folinn H110T, sized to spindle (e.g. H110T 5R5G/7R5P for 5.5 kW)
Controller	Weihong NK105 (G2/G3) + terminal board
Spindle	HQD air-cooled, 2-pole, 400 Hz (verify nameplate V/A)
Control cable	Shielded multi-core 0.5–1.0 mm²
Power cable	4-core shielded (U/V/W + earth), sized to power

3. Wiring — Control (NK105 board → H110T inputs)

Wire (typical colour)	NK105 output	Function	H110T terminal
Red	SPIN-FWD	Run forward ON/OFF	S1 (FWD)
Green	bit0	Multi-step bit 0	S3
Black	bit1	Multi-step bit 1	S4
Yellow	bit2	Multi-step bit 2	S5
Blue	COM	Digital common	COM

Wire colours vary by batch — confirm by terminal name. Set the H110T NPN/PNP selection to match the NK105 output (NPN/sinking typical).

Power: Mains R/S/T via breaker+filter → H110T input; U/V/W → spindle (phase order = direction); solid earth from spindle, VFD, frame to one point.

4. Folinn H110T Parameters

Basic (F0):

Param	Set	Description
F0.02	1	Command source = terminal
F0.03	6	Frequency source = multi-step
F0.04	400.00	Max frequency (300 if 18,000 RPM)
F0.05	400.00	Upper limit
F0.06	0.00	Lower limit
F0.07	8.0	Accel time (s)
F0.08	8.0	Decel time (s)

Motor (F1) — from nameplate. Wrong voltage burns the spindle:

Param	Set	Notes
F1.01	Nameplate kW	e.g. 5.5
F1.02	Nameplate V	220 or 380 V
F1.03	Nameplate A	Rated current
F1.04	400.00	Rated frequency
F1.05	24000	Rated RPM (2-pole)

Inputs (F5):

Param	Set	Function
F5.01 (S1)	1	Forward run
F5.03 (S3)	16	Multi-step terminal 1
F5.04 (S4)	17	Multi-step terminal 2
F5.05 (S5)	18	Multi-step terminal 3

Note: Folinn multi-step function codes are commonly 16/17/18 — confirm against your unit's manual, as the trap on this VFD (like the DV203) is multi-step terminals defaulting to other functions.

Multi-step speeds (F-step group) — % of F0.04, match NK105 handle:

Gear	Param	%	Hz	RPM
S1	step0	0	0	0 (Stop)
S2	step1	25	100	6,000

S3	step2	37.5	150	9,000
S4	step3	50	200	12,000
S5	step4	62.5	250	15,000
S6	step5	75	300	18,000
S7	step6	87.5	350	21,000
S8	step7	100	400	24,000

5. NK105 Controller Setup

Menu → Parameter → Spindle.

- Spindle type: **Multi-step / gear (binary)**, not analog
- Number of gears: **8**
- Start/stop delay: **5000 ms** each
- Gear table S1–S8: 0 / 6,000 / 9,000 / 12,000 / 15,000 / 18,000 / 21,000 / 24,000 RPM (match Section 4)

6. Commissioning Sequence

1. Pre-power: wiring per Section 3; pull-test; U/V/W + earth tight; fan path clear; breaker off
2. Power-up: H110T shows 0.00; NK105 boots
3. Enter parameters, save, power-cycle, verify
4. NK105 setup (Section 5)
5. Test: spindle ON at S2 → 6,000 RPM; step gears up; OFF ramps down. Wrong direction → power off, swap two of U/V/W
6. Sign-off: run S8 5 min (body warm not hot), no vibration, test-cut, log values

7. Troubleshooting

Symptom	Likely cause	Action
Won't start	FWD not reaching S1	Check F5.01=1; meter S1 to COM
Runs alternate/paired gears	Multi-step terminal default wrong	Set F5.03/04/05 to multi-step (16/17/18)
Wrong RPM	Step values ≠ NK105 labels	Re-enter Section 4 to match Section 5
Overvoltage on stop	Decel too fast	Raise F0.08 to 12 s; brake resistor
Overload/overheat	Wrong F1.03, dust-blocked fan	Verify rated current; clean fan/intake
Spindle hot	Air path blocked, running too slow	Clear airflow; avoid sustained low RPM

8. Quick Reference

`F0.02=1 · F0.03=6 · F0.04=400 · F0.07=8 · F0.08=8` `F1.01..05 = nameplate (kW/V/A/Hz/RPM)`
`F5.01=1 · F5.03=16 · F5.04=17 · F5.05=18` `steps: 0 / 25 / 37.5 / 50 / 62.5 / 75 / 87.5 / 100 %`

Air-cooled rule: keep the fan path clean and don't run sustained below ~6,000 RPM — air-cooled spindles rely on speed and airflow to stay cool.

Need help? WhatsApp AZ Inspired: +91 98764 32933 · For qualified technicians. Folinn function codes vary by firmware — verify multi-step codes against your unit's manual. Verify all values against your spindle nameplate.