

How To Remote Control Any Tractor



Combine cab with left hand joystick for tractor.

RCFarmBot can remotely control almost any tractor, regardless of make or model. All that is needed is power steering and preferably a power shift transmission. Park it on the edge of the field with a grain cart and drive it to your combine via remote control when the hopper fills. No major alterations to the tractor are needed, not even a CAN bus interface.

“Our backward compatible hardware overlays your existing tractor controls to provide flexible autonomous driving, no matter your tractor’s age,” says Vincent Pawluski, Pawlutions Ltd. “To do any level of autonomy now pretty much requires a new tractor and the right brand. We’re filling a hole in the market with RCFarmBot.”

The company grew out of years of tinkering with mechanical remote controls. A few years ago, Pawluski developed a remote start to reduce the need to climb in and out of tractors when filling and emptying grain bags.

“My whole outlook on things is if I need it, I’ll learn it so I can do it,” he said.

Posting a short video on it to Twitter resulted in dozens of contacts. Others needed what he needed, so he got serious about the project.

The result was RCFarmArm with remote control of ignition, engine rpm, pto, and hydraulics (featured in FARM SHOW Vol. 45, No. 5). One module fits on top of the tractor’s armrest controls. A key module attaches to the steering wheel post to turn the tractor on and off, while a second module adjusts steering. A stop button on his handheld control turns everything off immediately if needed. The easily removed modules eliminate any concerns about violating warranties or affecting resale value.

To produce the RCFarmArm, Pawluski taught himself how to use computer-aided design and 3D printing. In less than a year, he had a patent, a working prototype, and a website and had begun filling orders. He also received the first of six Ag Innovations awards and established a company to build the systems on his Alberta farm.

Within another year he came up with RCFarmBot to give him full remote control of his tractors. This time, it only took him 45 days to finalize the design.

“I’ve been refining the product with a limited introduction,” says Pawluski. “I plan to release it for sale after another year of testing it more broadly in the field. I’m being more cautious with it than I was with RCFarmArm. It’s more of a challenge when the tractor is moving.”

Like RCFarmArm, in-cab modules overlay existing controls, including ignition, parking brake, gearshift lever, throttle control, steering, foot pedals, and autosteer engagement. The remote control features a screen for viewing in the cab and around the tractor.

“The combine operator has a left-hand joystick for remote control of the driverless

tractor,” explains Pawluski.

In addition to a stop button on the joystick, the system on the driverless tractor has Bluetooth detection. If anyone with a Bluetooth device comes within a 75-ft. radius of the tractor, it idles down, goes into neutral, and engages the parking brake.

“I developed RCFarmBot for use in my combine operation to reduce labor and fuel costs,” says Pawluski. “I don’t have to have someone sitting in the grain cart tractor with the air conditioner on.”

While Pawluski designed the RCFarmBot so operators could install it, he acknowledges they may want to have a mechanic install it. Each system is custom-made for the particular tractor model.

“Having power shift is optimal,” says Pawluski. “Standard shift is more complicated and would be limited to only one or two speeds.”

Pawluski has several other remote-controlled systems in development and is



Ignition and foot pedal modules.

working on full autonomous operation.

“I’m playing around with some open-source automation software,” he says. “RCFarmBot has no software of its own. I wanted to prove to Raven and others that we can use anyone’s software and put it to use on any tractor without regard to the year, make, or model.”

Prices for RCFarmArm range from \$6,400 to \$7,200, depending on the make and model of combine. “My goal is to price RCFarmBot around \$35,000 to \$40,000,” says Pawluski.

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Armrest overlay with throttle control in RC tractor.



Beam extends out from the bucket’s right side about 4 ft. at about a 30-degree angle.

Beam Eliminates Snow Ridges

Eric Pederson didn’t like the tall ridges left on the sides of his driveway after using his loader bucket to clear snow. When the next North Dakota wind came through, it would blow the snow back onto his driveway.

“So, I was looking at wings on road graders,” Pederson says, and he went on to bolt a wooden 4x4 under the loader bucket.

The beam extends out from the bucket’s right side about 4 ft. at about a 30-degree angle.

Pederson explains that he first moves snow with just the bucket, then adds the 4x4 with

three 1/2-in. bolts.

“I was worried it would break easily, but I had the wooden 4x4 on hand, so I had no input cost and have used it several times without problems,” he says.

It takes a little time to put on and remove the 4x4, but it’s been worth it to eliminate the ridge of snow, Pederson says.

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Hour Meter Can Save Total Hours

Replace a failed hour meter without losing track of accumulated hours. The ENM TB45 series offers a preset/reset function that can be preset with the hours recorded on the old meter before installation. Once it’s run for an hour, the preset and reset functions are disabled permanently for accurate time recording. A non-reset version is also available.

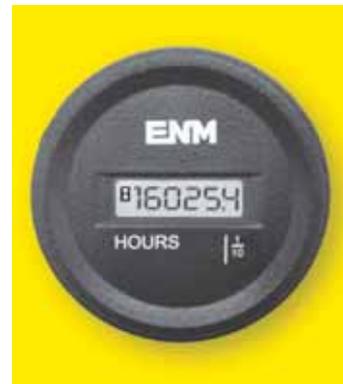
The TB45 series is ideal for any application requiring a reliable count or for timekeeping in service maintenance schedules. ENM has supplied OEMs with counters and hour meters for 65 years. The company sells products directly from its website, as well as through an extensive list of distributors.

The AC/DC hour meter with its wide voltage range makes it ideal for a variety of applications. No external power connections are needed. Operation is triggered by a shielded and external lead (about 5 ft. long, included) wrapped around an engine spark plug wire.

The meter uses a low operating current and is powered by a non-replaceable lithium battery, allowing an always-on display. The battery has an operating life of more than 15 years.

Durability is assured with full epoxy encapsulation of the meter to protect it from shock and vibration. The meter is completely sealed and has an operating temperature range of -22 to 159 F.

The TB45 series are all priced at \$52 and available directly from ENM in a variety of



ENM meter uses a low operating current and is powered by a non-replaceable lithium battery, allowing an always-on display. The battery has an operating life of more than 15 years.

styles. They include round and rectangular cases with and without holes or studs for mounting. ENM offers a wide array of timing products, including digital tach/maintenance/hour meters, wireless motion-detected counters, and vibration-activated hour meters.

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