Overview of Capacitive DRO Scales

Capacitive linear scales have been popular with budget-conscious home machinists for the better part of three decades. The main appeal of capacitive scales is their low cost that gives the hobbyists access to a functional digital readout for a fraction of the cost of an off-the-shelf DRO. On top of that, these scales can be easily cut to the needed size making them preferable for smaller machines. As is the case with all DRO scales, capacitive scales have their pros and cons, so it's important to have at least a cursory understanding of the most important DRO scale characteristics.

There is a large number of capacitive scale models on the market offered by several manufacturers. While they might look similar on the outside, there are many important internal differences between capacitive DRO scales, including data format, communication protocol, and power supply voltage. The good news is that TouchDRO can interface with the vast majority of Chinese linear scales on the market, but different scales have different adapter hardware and firmware requirements. To make sure that you select the compatible combination of scales, TouchDRO adapter and firmware, please refer to the list below.

Supported Scales

TouchDRO relies on custom adapter firmware to interface with various models of capacitive scales. At the time of this writing, most mainstream linear scales and a number of other specialty scales are supported. Each scale family had different interfacing hardware requirements and decoding firmware. The list below contains details about supported capacitive scale families, their important characteristics, and TouchDRO adapter compatibility.

Please note that this list is not comprehensive. It's impossible to test and verify every scale model on the market; so, even if your scales are not listed, it might still work just fine with TouchDRO. You will need to do some research and testing on your own though.

iGaging DigiMag Remote DRO

iGaging DigiMag was the first capacitive scale model with a display that can be mounted remotely. They use an extruded aluminum frame in conjunction with an injection-molded plastic transducer housing. The display is connected to the reading head using a USB cable that is glued to the transducer board and has a male plug on the display end. The scales are powered via two 3V cells connected in parallel.
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These scales were sold in some parts of the world under Shahe name or even without branding. They were identical to the iGaging version unlike the newer Shahe 4304-xxxA scales (shown further down) that use similar displays but are completely different and incompatible.

iGaging EZ-View DRO Plus

iGaging EZ-View is the updated version of the classic iGaging DigiMag Remote DRO scales. The scales use an extruded aluminum frame with an injection-molded plastic reading head and a large stackable display. Ignoring the difference in the display, these scales are basically identical to their predecessor.

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AccuRemote DRO

AccuRemote DRO scales are rebranded and upgraded DigiMag scales. They electronically identical to the iGaging scales but use a precision ground stainless steel frame with machined stainless steel encoder housing along with blue plastic.
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Shars Digital Machine Scale

Shars Digital Machine Scales are another example of rebranded DigiMag scales. These scales come in two flavors: with extruded aluminum frame and plastic encoder housing similar to the iGaging DigiMag scales, and with stainless steel frame and encoder housing similar to the AccuRemote DRO scales.
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iGaging Absolute DRO Plus

iGaging Absolute DRO Plus scales use a true absolute encoder and stainless steel frame/encoder housing along with the large stackable display. These scales are incompatible with other iGaging scales since they use a completely different data format and communication protocol.
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There is an older version of Absolute DRO scales without the "Plus" designation that uses a completely different data protocol and is incompatible with TouchDRO.

Shahe Digital Liner DRO Scales with Round Display

The "Round Display" Liner DRO scales (model 5403-xxx) are manufactured by Sanhe Measuring Instrument Co., Ltd. and have been introduced to the market relatively recently. Just like iGaging DigiMag and EZ-View, Shahe scales use an extruded aluminum frame, plastic housing, and are powered by a 3V battery. Internally, they use a completely different encoder strip and send the data in BIN 6 format. Also, a notable fact is that these scales have the cable hard-wired into the display; on the other side, some samples come with a USB connector while others come hard-wired into the reading head as well.

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Shahe Digital Linear DRO Scales with "Square" Display

The "Square Display" version of the scales (model 5403-xxxA) is similar to the "Round Display" model but uses a display that is similar to the iGaging DigiMag scales. Internally both Shahe models are identical. They rely on the same encoder stip and PCB and transmit the data in the same format but have some minor differences.
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Shahe Vertical Type Digital Linear Scale

These scales are based on the same encoder and use the same data format as the Shahe "Digital Linear DRO Scales" scales but have a few notable differences. They use a precision ground stainless frame with machined stainless steel housing, a display that is built into the reading head, and a USB data port. Even though these scales are powered by a 3V cell, the data stream is scaled down to 1.5V.
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Generic Chinese Linear Scales

This family includes many different scales from a number of manufacturers. These scales generally use stainless steel frame and encoder housing and are powered by a single 1.5V button cell battery. They use the traditional 4-pin caliper data port. Some of these scales might look like digital calipers with their jaws removed, but in most cases, they come with purpose-built displays, either vertical or horizontal.
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Inexpensive Digital Calipers

Almost all inexpensive Chinese digital calipers on the market use the same 4-pin data port as the generic Chinese scales mentioned above and are powered from a single 1.5V button battery. Some manufacturers also sell linear scales that use the same frame and electronics but have the jaws remove and mounting holes added.
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