

FLOW SENDER, FREQUENCY INPUT Flow Measurement with Pulse Input 1-200Hz

The TK-FLO-FREQ measures pulse-type open-collector flow meters. In this document it is referred to as a “Sender”.

Housed in a water-tight encapsulated tube, 44mm diameter, 92mm long, the sender powers the sensor and measures the frequency of the pulse train over a 2 second period.. A green/red/orange LED makes troubleshooting easier.

It is compatible with Tonick BT2 and Irrinet decoder interfaces. Additionally, the Tonick RM-2 Internet-based controller.

(The BT2 decoder interface is an OEM product and can be customised to suit the customer's controller. The range includes a full function Eurocard, down to a pre-programmed microprocessor that can be built into the customer's own controller PCB.)



TK-FLO-FREQ

TK-FLO-FREQ SPECIFICATION:

Flow Frequency:

(Open collector pulses, fed by +9V from sender)

Example flow-meters:

Creative Sensor Technology FSI-T00-000, 0.5-200Hz

George Fisher Signet 2536, 0.5-255Hz

Badger Meter 200 Series, 3.2-200Hz, 5mS pulses

(measurement interval 2 seconds. Frequency rounded down to 1 byte)

Byte output 0-255 for 0-255Hz

IMPORTANT:

The TK-FLO-FREQ is calibrated for 50Hz 2Wire path frequency. If used with 60Hz, scale the measured byte reading by 6/5

Responds to Sender address 1-15, as programmed on the Tonick Programmer/Tester
Sender address does not conflict with any valve decoders (1-127 or 1-63)

Wire Colours:

(Type 99, military specification wires)

2Wire Path:

Red, Black: 19-32VAC 50/60Hz. Standby current 8mA

Flow:

Yellow: +9V transducer power (if needed), max. 15mA

White: flow pulse + (internally fed from +9V through 1K5 resistor) 600uA drain will give >8VDC at the flow meter.

Blue: Flow pulse - (0V)

LED:

bi-colour

Green: TK-FLO-FREQ listening, has power

Red: Sender being interrogated by the BT2/Irrinet/RM-2.

Orange: Flow pulse received

NOTES:

- DIAS-compatible and can be used with up to fourteen other Senders 1...15.
- TK-FLO-CC, TK-PRES-xx, TK-VWC-xx and TK-UNI-8 are only addressable 1-8
- TK-COMBO reserves either sender addresses 9,10,11 with the Master Valve programmed to 126, or 12,13,14 with the Master Valve programmed to 127.
- Interrogation of any sender takes 2 +/- 0.5 seconds

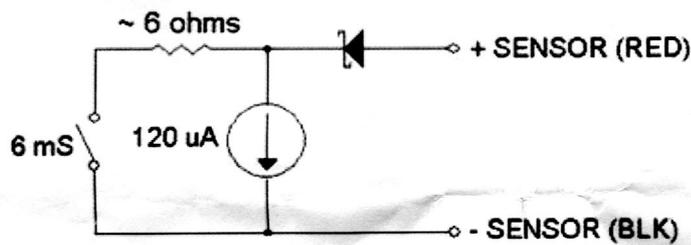
Do not have more than one sender at the same address!

Flow Meter, Frequency Measurement

A flow frequency transducer may be used. Normally this is a 2-wire device, where the positive wire is connected to the TK-FLO-FREQ white wire and the negative wire to the blue.

When not pulsing, the transducer internal circuit takes a small current from the positive. This is supplied by the TK-FLO-FREQ from the white wire fed from +9V through its internal 1K5 resistor.

When a flow pulse is generated, an open collector circuit pulls the positive and negative close together for about 5mS. At higher frequencies, this becomes approximately a square wave.



The figure above is a simplified circuit diagram of the internals of a flow transducer.

Frequencies range from about 0.1Hz, up to about 250Hz depending on the make of the flow transducer and the velocity of the water flowing in the pipe.

The frequency can be converted to flow, by manufacturer's supplied constants, K and Offset, which depend on the pipe diameter and desired units of flow. (This must be done in the host controller, not in the sender or its interface.)

$$\text{FLOW} = (\text{Frequency} + \text{OFFSET}) * K$$

The TK-FLO-FREQ returns frequency in a byte 0-255 corresponding to 0Hz-255Hz. Measurement interval is 2 seconds, then rounded to cycles per second (Hz) and packed into the byte.

There is a tolerance of +/- 1Hz on the returned reading. There is a smoothing algorithm with about 15-20 seconds settling.

The flow frequency returned is scaled for 50Hz 2wire path frequency. If the TK-FLO-FREQ is used on a 60Hz 2Wire path frequency, scale the byte reading by 6/5

Part Number: TK-TK-FLO-FREQ



Tonick Watering Ltd.
 Sales Office
 Wilsonwells Croft
 Crimond
 Fraserburgh
 Aberdeenshire AB43 8YH
 UK (+44)
 tel: (0)1346 531193
 Fax: (0)1346 531189
 Mail:tony@tonick.co.uk Web:www.tonick.co.uk
 Mobile +44 (0)7595 894484

This is a preliminary data sheet. Specifications subject to change without notice E. & O. E.

V1.1