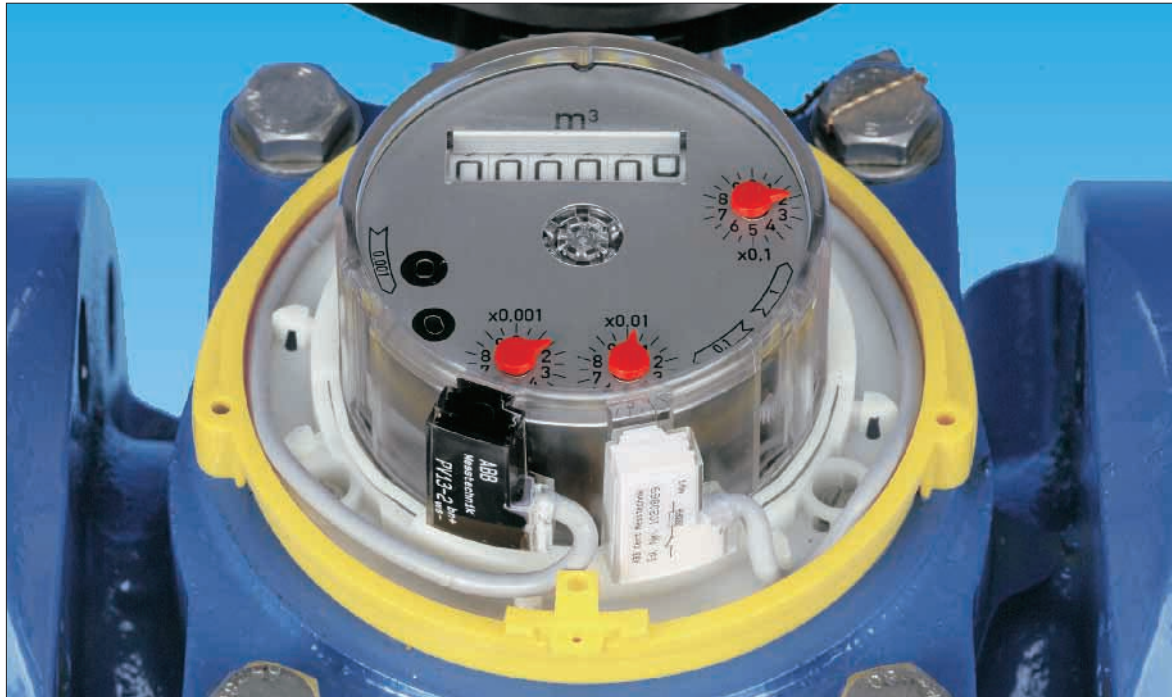


## Pulse Units

### Reed, Opto-electronic, Inductive

Top-fit registers by a simple plug-in



Without shroud

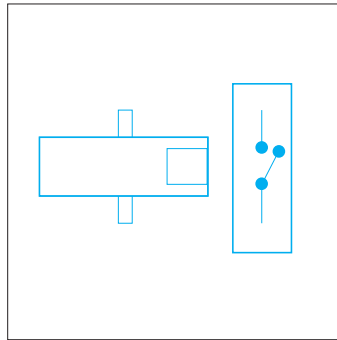
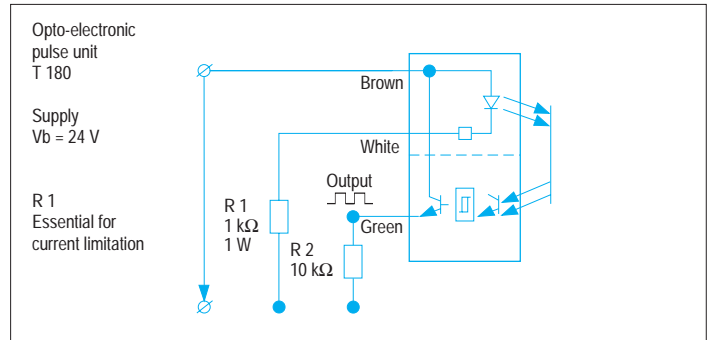
- ✗ Fast contact rate: just right for MULTI-PULS and TDD.
- ✗ Long life contactor technology: retrofittable on old and new registers.
- ✗ Sturdy push-fit connection: secure positioning in precise guide grooves.
- ✗ Hermetically sealed housing: protected to IP 68.



# The detailed engineering

## Pulse amplifiers Frequency-current converters

We recommend using pulse amplifiers and frequency-current converters from our range. Otherwise, please study the schematics.



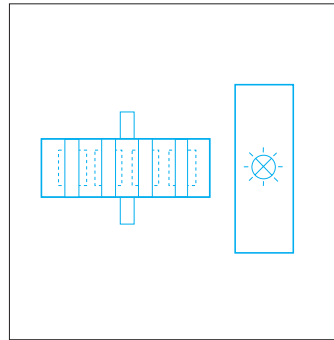
**Reed switch pulse unit  
MULTI-PULS / TDD /  
MULTI-PULS-TROPIC**

### T 160 REED

- ✗ Contact loading  
24 V/100 mA with  
suitable spark suppression.
- ✗ Pulse/interval sequence  
20/80.
- ✗ Protective resistor 100 Ohm.
- ✗ Mean lifetime  
 $10^7$  operating cycles.
- ✗ Two-wire design.
- ✗ Cables 2 x 0.25 mm<sup>2</sup>, 2 m.
- ✗ Protected to IP 68.
- ✗ Explosion-protected,  
usable in intrinsically  
safe circuits Zone 1.
- ✗ 25 x 20 x 10 mm.
- ✗ Temperature range  
-10 °C ... +90 °C.
- ✗ Any desired connections.

### T 161 Double REED

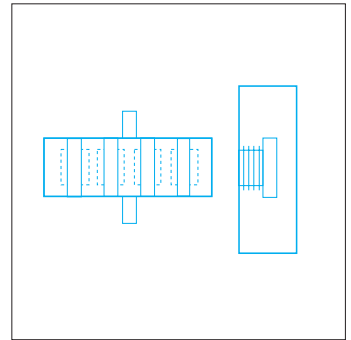
- ✗ Bi-directional:  
forward and reverse  
flow measuring.
- ✗ Overlapping pulses.
- ✗ Three-wire design.



**Opto-electronic  
pulse unit  
MULTI-PULS / TDD**

### T 180 PV 14

- ✗ Infrared optical sensor  
with OP amplifier.
- ✗ 12 V/15 ... 25 mA,  
24 V with 1 kOhm.
- ✗ Pulse/interval sequence  
50/50.
- ✗ Line resistance  
< 15 Ohm/core.
- ✗ Three-wire design.
- ✗ Cables 3 x 0.25 mm<sup>2</sup>, 2 m.
- ✗ Protected to IP 68.
- ✗ 25 x 20 x 10 mm.
- ✗ Temperature range  
-10 °C ... +70 °C.
- ✗ Connections
  - White
  - + Brown
  - Green.



**Inductive  
pulse unit  
MULTI-PULS / TDD**

### T 170 PV 13-3

- ✗ Connection circuitry:  
NAMUR DIN 19 234.
- ✗  $U_o$  8 ... 12 V,  
 $R_i$  1 kOhm.
- ✗ Pulse range approx. 9 ms,  
closed-circuit current  
< 0.7 mA,  
operating current > 3 mA.
- ✗ Output frequency < 60 Hz.
- ✗ Line resistance  
< 50 Ohm/core.
- ✗ Two-wire design.
- ✗ Cables 2 x 0.25 mm<sup>2</sup>, 2 m.
- ✗ Protected to IP 68.
- ✗ 25 x 20 x 10 mm.
- ✗ Temperature range  
0 °C ... +70 °C.
- ✗ Connections
  - White
  - + Brown.

### T 171 PV 13-3 LC

- ✗ Explosion-protected,  
usable in intrinsically  
safe circuits Zone 1.

# Ordering information and pulse sequences

Pulse unit	Register Type	Original package Order No.	Spare part Order No.
T 160 REED	Reed switch	TDD MULTI-PULS MULTI-PULS-TROPIC	*0522237 1020869 1020869
T 161 Double REED	Bi-directional	MULTI-PULS MULTI-PULS-TROPIC	1129097 1129097
T 180 PV 14	Opto-electronic	TDD MULTI-PULS	*0524816 0601558
T 170 PV 13-3	Inductive	TDD MULTI-PULS	*0604545 1124346
T 171 PV 13-3 LC	Explosion-protected	TDD MULTI-PULS	*1161489 1161454

\* Kit with cable connection

Pulse sequences Standard					
Nominal size Meter size / nominal flow rate	DN mm Q <sub>n</sub> m³/h	15 ... 40 1 ... 10	50 ... 125 15 ... 100	150 ... 300 150 ... 600	400 ... 500 1 000 ... 1 500
T 160 / T 161	Litres/pulse	100/1 1 000/1	100/1 1 000/1	1 000/1 10 000/1	10 000/1 100 000/1
T 180	Litres/pulse	0.1/1	1/1	10/1	100/1
T 170 / T 171	Litres/pulse	0.1/1	1/1	10/1	100/1

## Installation example MULTI-PULSE register

1. Swing open lid.
2. Unscrew two slotted screws and press the front and rear together to take off the shroud.
3. Push the pulse unit as far as it will go into the appropriate guide groove. First read the sign on the lid!
  - Reed switch pulse units: any position OK.
  - Opto-electronic and inductive pulse units: slide in dovetail with cable facing downwards.
4. Lead out cable through recess in lid ring.
5. Click the shroud into place again, and secure with two slotted screws.
6. Close the lid.



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