

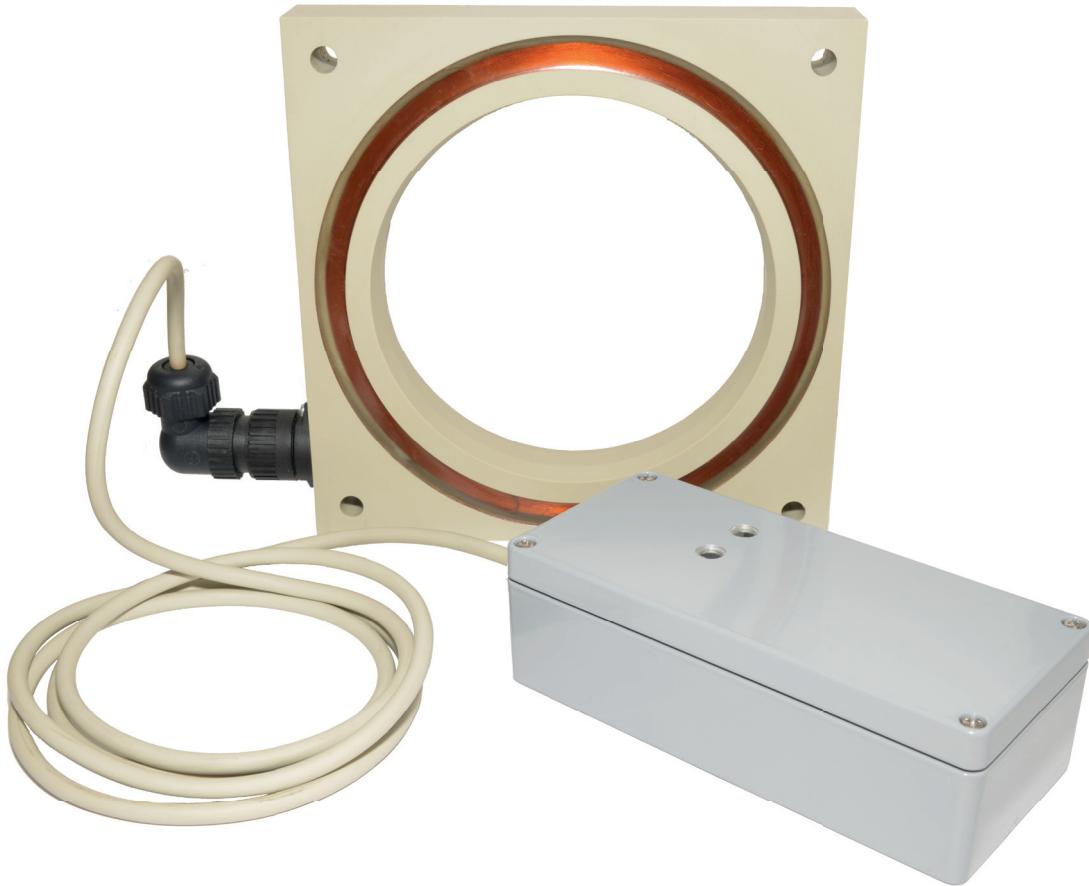


OPTRONIC

Control Technology and Sensors



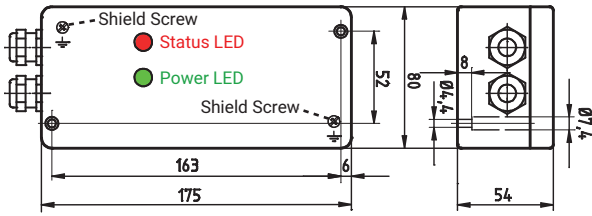
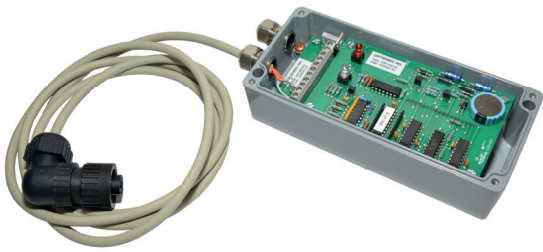
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Control Unit IRV20

Self-Adjusting Control Unit for Sensing Coil IRT

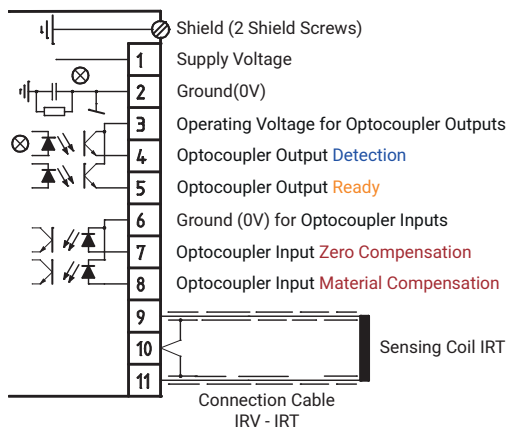
- Typical application areas: Tube processing machines (Straightening, Pilgering), tube feeding by mandrel bars
- Automatic compensation of environmental metal masses
- Automatic compensation of environmental fields
- Automatic adjustment of the optimum response sensitivity related to the immersion depth of the material in the coil
- Adjustment remains stored after power-off
- High operational reliability under difficult conditions
- Isolated optocoupler switching outputs with high load rating (30V/100mA)
- Isolated optocoupler switching inputs
- Robust metal housing, protection class IP65
- Supply voltage: 24V DC or 24V AC



Status LED: Flashes (approx. 2Hz) during Zero or Material Compensation bright (condition ON) while material is detected

Power LED: bright (condition ON), if the device is supplied and if the device-internal voltage-converter is working correctly

Connections in Control Unit IRV20
(accessible after removing the housing cover)



Output **Detection**: Conducting (condition ON): Material detected
 Output **Ready**: Conducting (condition ON): IRV20 adjusted/ready for operation
 Input **Zero Comp.**: Current flowing (condition ON): Start Zero Compensation
 Input **Mat. Comp.**: Current flowing (condition ON): Start Material Compensation

Self-Adjusting System:

- Automatic Zero Compensation:
The influence of surrounding metal masses, static electromagnetic fields, or a mandrel bar in a pipe to be detected is automatically compensated.
- Automatic Material Compensation:
The optimal response sensitivity related to the immersion depth of the material into the sensing coil is determined automatically.
- Storing the Adjustment after Power-Off:
Zero compensation and material compensation remain stored without power supply for approx. 2 weeks, assuming that the device was powered-on for more than 2 hours before.

Performing a Zero Compensation:

- ① The material to be detected may be not near the sensing coil IRT
- ② A pulse at input **Material Compensation** triggers the Zero Compensation
- ③ During the automatic zero compensation, the **Status LED** flashes, and the outputs **Detection** and **Ready** are both OFF
- ④ Was the Zero Compensation successful?
 - YES:
⇒ **Status LED** OFF, output **Detection** OFF, output **Ready** ON
 - NO (Zero Compensation not possible due to too much surrounding metal masses):
⇒ **Status LED** still flashes, outputs **Detection** and **Ready** stay OFF

Performing a Material Compensation:

- ① Insert the material to be detected axially to the middle of the sensing coil IRT
- ② A pulse at input **Material Compensation** triggers the material compensation
- ③ During the automatic Material Compensation, the **Status LED** flashes, and the outputs **Detection** and **Ready** are OFF
- ④ The IRV20 completes the material comparison automatically
⇒ Output **Ready** ON
- ⑤ Was the Material Compensation for the material to detect successful?
(Attention: The material to detect must still be inserted into the sensing coil IRT)
 - YES:
⇒ **Status LED** ON, output **Detection** ON
 - NO (the maximum possible response sensitivity is not sufficient):
⇒ IRV20 adjusts itself to the maximum possible response sensitivity
⇒ **Status LED** OFF, output **Detection** OFF
- ⑥ Remove the material to be detected from the sensing coil IRT
⇒ Output **Ready** ON, **Status LED** OFF, output **Detection** OFF

Operation:

- ① Turn on power
- ② **Power LED** OFF?
⇒ IRV20 defective
- ③ **Power LED** ON and output **Ready** OFF?
⇒ IRV20 not adjusted ⇒ Adjust the IRV20 (Zero and Material Compensation)
- ④ **Power LED** ON and output **Ready** ON?
⇒ IRV20 ready for material detection
- ⑤ No material to detect inserted into the sensing coil IRT?
⇒ **Status LED** OFF, output **Detection** OFF
- ⑥ Material to detect inserted into the sensing coil IRT?
⇒ **Status LED** ON, output **Detection** ON

Parameter	IRV20
Supply Voltage	24V DC (18V to 30V) or 24V AC (18V to 30V)
max. Current Consumption	100mA (24V DC) / 200mA (24V AC)
Optocoupler Outputs: Operating Voltage	10V to 30V DC
Optocoupler Outputs: max. Load per Output	100mA
Optocoupler Outputs: min. Isolation Voltage	5000V _{rms}
Optocoupler Inputs: Operating Voltage	18V to 30V DC
Optocoupler Inputs: Positive Switching Threshold	15V
Optocoupler Inputs: Negative Switching Threshold	5V
Optocoupler Inputs: min. Isolation Voltage	5000V _{rms}
Optocoupler Inputs: max. Current (Operating Voltage 24V DC)	4mA
Optocoupler Inputs: min. Pulse Length to Trigger a Compensation	2ms
Connection Terminals: Max. Conductor Cross-Section	2.5mm ²
Connection Terminals: Optimum Stripping Length	6mm
Length of Connection Cable between IRV und IRT	maximum: 3m, standard: 2m
Allowed Ambient Temperature	0° to +60°C
Protection Class	IP65

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