# OPTIMA VAV Controllers Comparison - Circular

| | LOW VELOCITY AIR FLOW CONTROL, MODULAR | | AIR FLOW CONTROL, COMPACT | | | | | | | | | SPECIAL VAV CONTROLLER | AIR FLOW CONTROL, MODULAR | | | | DUCT PRESSURE CONTROL, MODULAR | | | | ROOM PRESSURE CONTROL, MODULAR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Actual name** | OPTIMA-**LV** | OPTIMA-**LV-...MOD** | OPTIMA-**R-FC...BM** | OPTIMA-**R-FC...BK** | OPTIMA-**R-FC...BP** | OPTIMA-**R-FC...BA** | OPTIMA-**R-FC...GM** | OPTIMA-**R-FC...SM** | OPTIMA-**R-FC...SB** | OPTIMA-**R-FC...SK** | OPTIMA-**R-FC...SA** | OPTIMA-**RES-A** | OPTIMA-**R-FC...BM-S** | OPTIMA-**R-FC...BM-F** | OPTIMA-**R-FC...BM-Q** | OPTIMA-**R-FC...BM-QE** | OPTIMA-**R-PC...BM-S** | OPTIMA-**R-PC...BM-F** | OPTIMA-**R-PC...BM-Q** | OPTIMA-**R-PC...BM-QE** | OPTIMA-**R-LPC...BM-S** | OPTIMA-**R-LPC...BM-F** | OPTIMA-**R-LPC...BM-Q** | OPTIMA-**R-LPC...BM-QE** |
| **Old name** | - | - | OPTIMA-R-...-BLC1MOD | OPTIMA-R-...-BLC1KNX | OPTIMA-R-...-BLC1 | OPTIMA-R-...-BLC4 | OPTIMA-R-...-GOMOD | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **Size range** | DN100 ... DN400 | DN100 ... DN400 | DN80 ... DN630 | DN80 ... DN630 | DN80 ... DN630 | DN80 ... DN630 | DN80 ... DN630 | DN80 ... DN630 | DN80 ... DN630 | DN80 ... DN630 | DN80 ... DN630 | DN100, DN125, DN160 | DN80 ... DN630 | DN80 ... DN630 | DN80 ... DN630 | DN80 ... DN630 | DN80 ... DN630 | DN80 ... DN630 | DN80 ... DN630 | DN80 ... DN630 | DN80 ... DN630 | DN80 ... DN630 | DN80 ... DN630 | DN80 ... DN630 |
| **Casing insulation variants** | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | - | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With |
| **Purpose** | VAV Controller | VAV Controller | VAV Controller | VAV Controller | VAV Controller | VAV Controller | VAV Controller | VAV Controller | VAV Controller | VAV Controller | VAV Controller | Supply & Extract, VAV Controllers, Sound-Attenuated | VAV Controller | VAV Controller | VAV Controller | VAV Controller | Duct Pressure Controller | Duct Pressure Controller | Duct Pressure Controller | Duct Pressure Controller | Room Pressure Controller | Room Pressure Controller | Room Pressure Controller | Room Pressure Controller |
| **Controller / Duct actuator configuration** | Compact | Compact | Compact | Compact | Compact | Compact | Compact | Compact | Compact | Compact | Compact | Compact | Modular | Modular | Modular | Modular | Modular | Modular | Modular | Modular | Modular | Modular | Modular | Modular |
| **Controller / Actuator OEM** | Belimo | Belimo | Belimo | Belimo | Belimo | Belimo | Gruner | Siemens | Siemens | Siemens | Siemens | Belimo | Belimo | Belimo | Belimo | Belimo | Belimo | Belimo | Belimo | Belimo | Belimo | Belimo | Belimo | Belimo |
| **Control range** | Air flow velocity 0,2 m/s ... 6 m/s | Air flow velocity 0,2 m/s ... 6 m/s | Air flow velocity 2 m/s ... 11 m/s | Air flow velocity 2 m/s ... 11 m/s | Air flow velocity 2 m/s ... 11 m/s | Air flow velocity 2 m/s ... 11 m/s | Air flow velocity 2 m/s ... 11 m/s | Air flow velocity 2 m/s ... 11 m/s | Air flow velocity 2 m/s ... 11 m/s | Air flow velocity 2 m/s ... 11 m/s | Air flow velocity 2 m/s ... 11 m/s | Air flow velocity 2 m/s ... 11 m/s | Air flow velocity 2 m/s ... 11 m/s | Air flow velocity 2 m/s ... 11 m/s | Air flow velocity 2 m/s ... 11 m/s | Air flow velocity 2 m/s ... 11 m/s | Differential pressure 20 Pa ... 600 Pa | Differential pressure 20 Pa ... 600 Pa | Differential pressure 20 Pa ... 600 Pa | Differential pressure 20 Pa ... 600 Pa | Differential pressure 0 Pa ... 75 Pa | Differential pressure 0 Pa ... 75 Pa | Differential pressure 0 Pa ... 75 Pa | Differential pressure 0 Pa ... 75 Pa |
| **Climate** | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor |
| **Measurement sensor** | Dynamic ΔP | Dynamic ΔP | Dynamic ΔP | Dynamic ΔP | Dynamic ΔP | Dynamic ΔP | Dynamic ΔP | Dynamic ΔP | Dynamic ΔP | Dynamic ΔP | Dynamic ΔP | Dynamic ΔP | Dynamic ΔP | Dynamic ΔP | Dynamic ΔP | Dynamic ΔP | Static ΔP | Static ΔP | Static ΔP | Static ΔP | Static ΔP | Static ΔP | Static ΔP | Static ΔP |
| **Measurement probe** | Moving, k ≠ const. | Moving, k ≠ const. | Static, k = const. | Static, k = const. | Static, k = const. | Static, k = const. | Static, k = const. | Static, k = const. | Static, k = const. | Static, k = const. | Static, k = const. | Static, k = const. | Static, k = const. | Static, k = const. | Static, k = const. | Static, k = const. | - | - | - | - | - | - | - | - |
| **Recommended straight duct length in front of the device** | 0 | 0 | 3 × DN | 3 × DN | 3 × DN | 3 × DN | 3 × DN | 3 × DN | 3 × DN | 3 × DN | 3 × DN | 3 × DN | 3 × DN | 3 × DN | 3 × DN | 3 × DN | - | - | - | - | - | - | - | - |
| **Power supply** | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V |
| **Analog control signal** | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | - | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | - | - | - | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V |
| **Analog feedback signal** | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | - | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | - | - | - | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V |
| **Analog feedback values selectable** | Air flow / Dynamic pressure / Damper position | Air flow / Dynamic pressure / Damper position | Air flow / Dynamic pressure / Damper position | Air flow / Dynamic pressure / Damper position | Air flow / Dynamic pressure / Damper position | Air flow / Dynamic pressure / Damper position | Air flow | - | - | - | Air flow | Air flow / Dynamic pressure / Damper position | Air flow / Dynamic pressure / Damper position | Air flow / Dynamic pressure / Damper position | Air flow / Dynamic pressure / Damper position | Air flow / Dynamic pressure / Damper position | Differential pressure / Damper position | Differential pressure / Damper position | Differential pressure / Damper position | Differential pressure / Damper position | Differential pressure / Damper position | Differential pressure / Damper position | Differential pressure / Damper position | Differential pressure / Damper position |
| **Bus communication protocol** | MP-BUS | Modbus RTU / BACnet MS TP / MP-BUS | Modbus RTU / BACnet MS TP / MP-BUS | KNX | MP-BUS | - | Modbus RTU | Modbus RTU | BACnet MS TP | KNX | - | MP-BUS | Modbus RTU / BACnet MS TP / MP-BUS | Modbus RTU / BACnet MS TP / MP-BUS | Modbus RTU / BACnet MS TP / MP-BUS | Modbus RTU / BACnet MS TP / MP-BUS | Modbus RTU / BACnet MS TP / MP-BUS | Modbus RTU / BACnet MS TP / MP-BUS | Modbus RTU / BACnet MS TP / MP-BUS | Modbus RTU / BACnet MS TP / MP-BUS | Modbus RTU / BACnet MS TP / MP-BUS | Modbus RTU / BACnet MS TP / MP-BUS | Modbus RTU / BACnet MS TP / MP-BUS | Modbus RTU / BACnet MS TP / MP-BUS |
| **On-Site parameter set-up devices, ports** | ZTH-EU, Bus, NFC | ZTH-EU, Bus | ZTH-EU, Bus | ZTH-EU, Bus | ZTH-EU, Bus, NFC | ZTH-EU | Config. panel included, Bus | AST20, Bus | AST20, Bus | AST20, Bus | AST20 | ZTH-EU | ZTH-EU, Bus, NFC | ZTH-EU, Bus, NFC | ZTH-EU, Bus, NFC | ZTH-EU, Bus, NFC | ZTH-EU, Bus, NFC | ZTH-EU, Bus, NFC | ZTH-EU, Bus, NFC | ZTH-EU, Bus, NFC | ZTH-EU, Bus, NFC | ZTH-EU, Bus, NFC | ZTH-EU, Bus, NFC | ZTH-EU, Bus, NFC |
| **Local hard-wired override functions** | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $P_{min}$, $P_{max}$ | OPEN, CLOSE, $P_{min}$, $P_{max}$ | OPEN, CLOSE, $P_{min}$, $P_{max}$ | OPEN, CLOSE, $P_{min}$, $P_{max}$ | OPEN, CLOSE, $P_{min}$, $P_{max}$ | OPEN, CLOSE, $P_{min}$, $P_{max}$ | OPEN, CLOSE, $P_{min}$, $P_{max}$ | OPEN, CLOSE, $P_{min}$, $P_{max}$ |
| **Power-OFF safety trip function** | - | - | - | - | - | - | - | - | - | - | - | - | - | ✓ | - | ✓ | - | ✓ | - | ✓ | - | ✓ | - | ✓ |
| **Typical damper O/C transition time** | >100 s | >100 s | >100 s | >100 s | >100 s | >100 s | >100 s | >100 s | >100 s | >100 s | >100 s | >100 s | >100 s | >100 s | <10 s | <10 s | >100 s | >100 s | <10 s | <10 s | >100 s | >100 s | <10 s | <10 s |
| **Damper Shut-OFF tightness class by EN1751** | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C |

# OPTIMA VAV Controllers Comparison - Rectangular

| | AIR FLOW CONTROL, COMPACT | | | | | | | | | AIR FLOW CONTROL, MODULAR | | | | DUCT PRESSURE CONTROL, MODULAR | | | | ROOM PRESSURE CONTROL, MODULAR | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Actual name** | OPTIMA-**S-FC...BM** | OPTIMA-**S-FC...BK** | OPTIMA-**S-FC...BP** | OPTIMA-**S-FC...BA** | OPTIMA-**S-FC...GM** | OPTIMA-**S-FC...SM** | OPTIMA-**S-FC...SB** | OPTIMA-**S-FC...SK** | OPTIMA-**S-FC...SA** | OPTIMA-**S-FC...BM-S** | OPTIMA-**S-FC...BM-F** | OPTIMA-**S-FC...BM-Q** | OPTIMA-**S-FC...BM-QE** | OPTIMA-**S-PC...BM-S** | OPTIMA-**S-PC...BM-F** | OPTIMA-**S-PC...BM-Q** | OPTIMA-**S-PC...BM-QE** | OPTIMA-**S-LPC...BM-S** | OPTIMA-**S-LPC...BM-F** | OPTIMA-**S-LPC...BM-Q** | OPTIMA-**S-LPC...BM-QE** |
| **Old name** | OPTIMA-S-...-BLC1MOD | OPTIMA-S-...-BLC1KNX | OPTIMA-S-...-BLC1 | OPTIMA-S-...-BLC4 | OPTIMA-S-...-GOMOD | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **Size range (mm)** | 200 × 100 ... 1200 × 1000 | 200 × 100 ... 1200 × 1000 | 200 × 100 ... 1200 × 1000 | 200 × 100 ... 1200 × 1000 | 200 × 100 ... 1200 × 1000 | 200 × 100 ... 1200 × 1000 | 200 × 100 ... 1200 × 1000 | 200 × 100 ... 1200 × 1000 | 200 × 100 ... 1200 × 1000 | 200 × 100 ... 1200 × 1000 | 200 × 100 ... 1200 × 1000 | 200 × 100 ... 1200 × 1000 | 200 × 100 ... 1200 × 1000 | 200 × 100 ... 1200 × 1000 | 200 × 100 ... 1200 × 1000 | 200 × 100 ... 1200 × 1000 | 200 × 100 ... 1200 × 1000 | 200 × 100 ... 1200 × 1000 | 200 × 100 ... 1200 × 1000 | 200 × 100 ... 1200 × 1000 | 200 × 100 ... 1200 × 1000 |
| **Casing insulation variants** | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With | Without / With |
| **Purpose** | VAV Controller | VAV Controller | VAV Controller | VAV Controller | VAV Controller | VAV Controller | VAV Controller | VAV Controller | VAV Controller | VAV Controller | VAV Controller | VAV Controller | VAV Controller | Duct Pressure Controller | Duct Pressure Controller | Duct Pressure Controller | Duct Pressure Controller | Room Pressure Controller | Room Pressure Controller | Room Pressure Controller | Room Pressure Controller |
| **Controller / Duct actuator configuration** | Compact | Compact | Compact | Compact | Compact | Compact | Compact | Compact | Compact | Modular | Modular | Modular | Modular | Modular | Modular | Modular | Modular | Modular | Modular | Modular | Modular |
| **Controller / Actuator OEM** | Belimo | Belimo | Belimo | Belimo | Gruner | Siemens | Siemens | Siemens | Siemens | Belimo | Belimo | Belimo | Belimo | Belimo | Belimo | Belimo | Belimo | Belimo | Belimo | Belimo | Belimo |
| **Control range** | Air flow velocity 2 m/s ... 11 m/s | Air flow velocity 2 m/s ... 11 m/s | Air flow velocity 2 m/s ... 11 m/s | Air flow velocity 2 m/s ... 11 m/s | Air flow velocity 2 m/s ... 11 m/s | Air flow velocity 2 m/s ... 11 m/s | Air flow velocity 2 m/s ... 11 m/s | Air flow velocity 2 m/s ... 11 m/s | Air flow velocity 2 m/s ... 11 m/s | Air flow velocity 2 m/s ... 11 m/s | Air flow velocity 2 m/s ... 11 m/s | Air flow velocity 2 m/s ... 11 m/s | Air flow velocity 2 m/s ... 11 m/s | Differential pressure 20 Pa ... 600 Pa | Differential pressure 20 Pa ... 600 Pa | Differential pressure 20 Pa ... 600 Pa | Differential pressure 20 Pa ... 600 Pa | Differential pressure 0 Pa ... 75 Pa | Differential pressure 0 Pa ... 75 Pa | Differential pressure 0 Pa ... 75 Pa | Differential pressure 0 Pa ... 75 Pa |
| **Climate** | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor | Dry, indoor |
| **Measurement sensor** | Dynamic ΔP | Dynamic ΔP | Dynamic ΔP | Dynamic ΔP | Dynamic ΔP | Dynamic ΔP | Dynamic ΔP | Dynamic ΔP | Dynamic ΔP | Dynamic ΔP | Dynamic ΔP | Dynamic ΔP | Dynamic ΔP | Static ΔP | Static ΔP | Static ΔP | Static ΔP | Static ΔP | Static ΔP | Static ΔP | Static ΔP |
| **Measurement probe** | Static, k = const. | Static, k = const. | Static, k = const. | Static, k = const. | Static, k = const. | Static, k = const. | Static, k = const. | Static, k = const. | Static, k = const. | Static, k = const. | Static, k = const. | Static, k = const. | Static, k = const. | - | - | - | - | - | - | - | - |
| **Recommended straight duct length in front of the device** | 3 × DN | 3 × DN | 3 × DN | 3 × DN | 3 × DN | 3 × DN | 3 × DN | 3 × DN | 3 × DN | 3 × DN | 3 × DN | 3 × DN | 3 × DN | - | - | - | - | - | - | - | - |
| **Power supply** | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V | DC/AC 24 V |
| **Analog control signal** | 0 (2) V ...10 V | - | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | - | - | - | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V |
| **Analog feedback signal** | 0 (2) V ...10 V | - | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | - | - | - | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V | 0 (2) V ...10 V |
| **Analog feedback values selectable** | Air flow / Dynamic pressure / Damper position | Air flow / Dynamic pressure / Damper position | Air flow / Dynamic pressure / Damper position | Air flow / Dynamic pressure / Damper position | Air flow | - | - | - | Air flow | Air flow / Dynamic pressure / Damper position | Air flow / Dynamic pressure / Damper position | Air flow / Dynamic pressure / Damper position | Air flow / Dynamic pressure / Damper position | Differential pressure / Damper position | Differential pressure / Damper position | Differential pressure / Damper position | Differential pressure / Damper position | Differential pressure / Damper position | Differential pressure / Damper position | Differential pressure / Damper position | Differential pressure / Damper position |
| **Bus communication protocol** | Modbus RTU / BACnet MS TP / MP-BUS | KNX | MP-BUS | - | Modbus RTU | Modbus RTU | BACnet MS TP | KNX | - | Modbus RTU / BACnet MS TP / MP-BUS | Modbus RTU / BACnet MS TP / MP-BUS | Modbus RTU / BACnet MS TP / MP-BUS | Modbus RTU / BACnet MS TP / MP-BUS | Modbus RTU / BACnet MS TP / MP-BUS | Modbus RTU / BACnet MS TP / MP-BUS | Modbus RTU / BACnet MS TP / MP-BUS | Modbus RTU / BACnet MS TP / MP-BUS | Modbus RTU / BACnet MS TP / MP-BUS | Modbus RTU / BACnet MS TP / MP-BUS | Modbus RTU / BACnet MS TP / MP-BUS | Modbus RTU / BACnet MS TP / MP-BUS |
| **On-Site parameter set-up devices, ports** | ZTH-EU, Bus | ZTH-EU, Bus | ZTH-EU, Bus, NFC | ZTH-EU | Config. panel included, Bus | AST20, Bus | AST20, Bus | AST20, Bus | AST20 | ZTH-EU, Bus, NFC | ZTH-EU, Bus, NFC | ZTH-EU, Bus, NFC | ZTH-EU, Bus, NFC | ZTH-EU, Bus, NFC | ZTH-EU, Bus, NFC | ZTH-EU, Bus, NFC | ZTH-EU, Bus, NFC | ZTH-EU, Bus, NFC | ZTH-EU, Bus, NFC | ZTH-EU, Bus, NFC | ZTH-EU, Bus, NFC |
| **Local hard-wired override functions** | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $V_{min}$, $V_{max}$ | OPEN, CLOSE, $P_{min}$, $P_{max}$ | OPEN, CLOSE, $P_{min}$, $P_{max}$ | OPEN, CLOSE, $P_{min}$, $P_{max}$ | OPEN, CLOSE, $P_{min}$, $P_{max}$ | OPEN, CLOSE, $P_{min}$, $P_{max}$ | OPEN, CLOSE, $P_{min}$, $P_{max}$ | OPEN, CLOSE, $P_{min}$, $P_{max}$ | OPEN, CLOSE, $P_{min}$, $P_{max}$ |
| **Power-OFF safety trip function** | - | - | - | - | - | - | - | - | - | - | ✓ | - | ✓ | - | ✓ | - | ✓ | - | ✓ | - | ✓ |
| **Typical damper O/C transition time** | >100 s | >100 s | >100 s | >100 s | >100 s | >100 s | >100 s | >100 s | >100 s | >100 s | >100 s | <10 s | <10 s | >100 s | >100 s | <10 s | <10 s | >100 s | >100 s | <10 s | <10 s |
| **Damper Shut-OFF tightness class by EN1751** | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C | 4C |