

EVOLUTION II-HT G

DATA SHEET

Description

The EVOLUTION II-HT G Gas Fuel Throttle Valve (EVO II-HT G) is a mechatronic assembly consisting of a valve, position servo and digital flow controller with associated redundant pressure instrumentation. In application, the assembly is usually mounted between pipe reducers as part of a complete fuel system. An optional temperature sensor can be fitted in the upstream pipe section to permit the flow controller to compensate for changes in gas fuel temperature.

The valve is normally fitted in a line between a safety shut-off system and the gas turbine fuel manifold. In use the flow controller receives a process demand signal from the turbine control system which may be calibrated in terms of heat, mass or volume flow units. The EVOLUTION II-HT G simply positions its throttle valve to deliver the demanded flow to the turbine manifold independently of fuel supply pressure or temperature so long as the fuel supply pressure is sufficient.

For multistream dry low emission systems, an EVOLUTION II-HT G valve is required for each stream.

Applications

- Gas fuelled gas turbines
- DLE gas fuelled gas turbine

Certificates

- Independently SIL rated and certified for use in hazardous areas (ATEX)



Features

High accuracy, flow fully compensated for fuel pressure and temperature, suitable for DLE systems

Absolute repeatability

Highly responsive and stable

Reliable and tolerant to dirty fuel supplies, does not use flow sensor, self-cleaning valve

User configurable and maintainable using free PC application

Network enabled for Profibus, DeviceNet, field busses

24 VDC power source only required

Competitive for wide range of turbine sizes

Lifetime self-adjusting seals protect against leakage

Technical data

Designation	EVOLUTION II-HT G (EVO II-HT G)
Overall weight	30 kg
Electronic controller/positioning servo	
Power supply voltage range	18 ... 32 VDC
Power supply current range	max. 20 A
Ambient temperature range	-20 ... +85 °C
Environmental rating	IP56
Hazardous area certification	II 2G Exd IIB T4 Gb
Maximum torque	25 Nm at 20 A
Maximum power	250 W
Small signal bandwidth	5 Hz
10-90 % position transit time	150 ms
Fuel gas pressure measurement range	0 through 25 bara standard, other pressures to special order
Fuel gas temperature measurement range	-40 ... +150 °C (with optional external 2 wires PT 1000 sensor) otherwise fixed to customer defined temperature
Position feedback accuracy	Accuracy 0.024 % with no short or long term drift (measured at valve shaft)
Signal demand	4 ... 20 mA isolated user scalable to heat (kW thermal), mass (kg/min) or volume (ncm/h) flow units.
Position achieved feedback	4 ... 20 mA isolated equivalent to 0 ... 100 % valve position
Dry contact output 1	Throttle valve min pos (NC when valve is closed)
Dry contact output 2	Fault detected (NO when fault is detected)
Faults monitored	Watchdog timeout Upstream pressure sensors disagree Downstream pressure sensors disagree Upstream pressure sensor out of range Downstream pressure sensor out of range Upstream temperature sensor out of range (if configured) Valve position sensor out of range Valve position error
Fault log	Event counter for each fault type since last reset
Fieldbus network types available	DeviceNet, Profibus
Flow metering algorithm	ANSI/ISA standard for real gases
Flow control recursion rate	10 milliseconds
Position servo recursion rate	1 millisecond
Final drive type and frequency	Four quadrant pulse width modulated 5kHz
Transient maximum current limit	10 A at motor
Steady state current limit	< 1 A at motor (after 5 seconds at max)
Servo gearbox type and ratio	20:1, two stage planetary low backlash
Field electrical connections	Screw terminals at non valve end accessed through threaded cover in end plate. Cable entry through four radial M20 x 1.5 threaded gland holes
Pressure connections	Four ¼" BSPF female ports in valve end plate
Maintenance connection	RS-232 protocol, connection for freeware PC application supplied by HEINZMANN UK
Valve actuation shaft	15 mm keyed

Throttle valve

Valve adapter	Three legged type to suit standard valve yokes
Valve coupling	Keyed solid type supplied to suit standard valve shaft diameters
Valve type	Fisher V300 or Metso RE Flanged V ball valve
Valve size	1" with four reductions through 3"
Valve characteristic	Equal percentage
Turbine application (natural gas)	500 kW ... 100 MW shaft power
Valve body material	Cast steel standard, stainless steel optional
Valve shaft and trim material	Stainless steel
Valve seal	Heavy duty metal:metal spring loaded
Valve stem packing	PTFE chevrons spring loaded and adjustable for valve lifetime
Valve pressure and temperature rating	To ANSI class 300
Valve leakage class	ANSI class IV

Notes:

(1) DeviceNet is a trade name of Allen-Bradley Inc. Profibus is a trade name of Siemens.

Must be specified at the time of ordering.

Where the protocol is control-device type, all implementations are device type.

Dimensions



