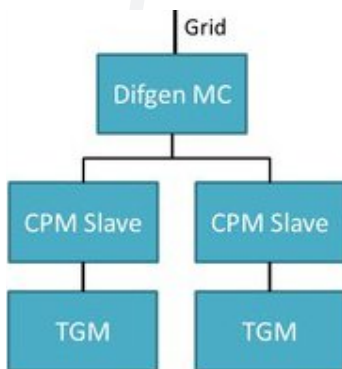




Difgen MC - master control

The Difgen MC is the master control unit for a pressure/flow control system comprising two or more Difgen turbines working in concert. With the built-in capability to control other valves and control devices, and to monitor external measuring devices, it represents a complete solution for a pressure or flow control station.

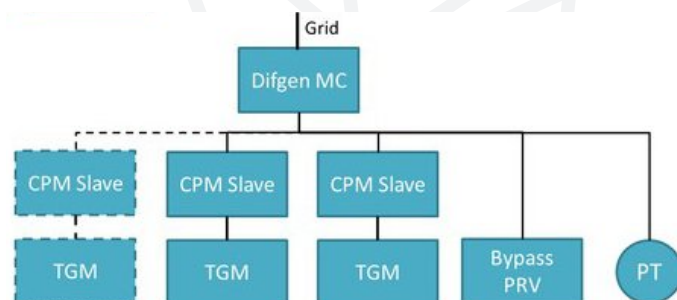


Basics

A multiple Difgen system requires a master control system to address such additional issues as:

- how operation of the Difgen array should be coordinated
- how the Difgen should be integrated in the overall operation

In its base configuration, the MC can control two Difgens in parallel or in series, a bypass PRV and three isolation valves. Adding optional plug and play control and measurement loops can extend it into a comprehensive system. A library of thoroughly tested standard functional blocks ensures consistent functionality.



Zeropex has issued a general guideline document (TDO11871) for anyone who wants to implement this functionality in their own SCADA/PLC system, or in their own frame-contract system integrator.

Configurations

Difgen MC starts with a standard configuration, and control loops for additional devices can be added up to the maximum configuration.

Device	Standard	Max
Difgens	2	3
PRVs or flow controllers	1	4
Isolation valves	3	8
Inlet pressure input	1	1
Outlet pressure input	1	1
Flowmeter input	1	1
Condition monitoring temp inputs for option +M01 (one unit covers up to three Difgen's)	0	1

Each additional device comes at a unit price. Check with your Zeropex contact. On request, Zeropex can add bespoke loops and functionality.

Certifications

Please see datasheet DS1001.

Physical properties

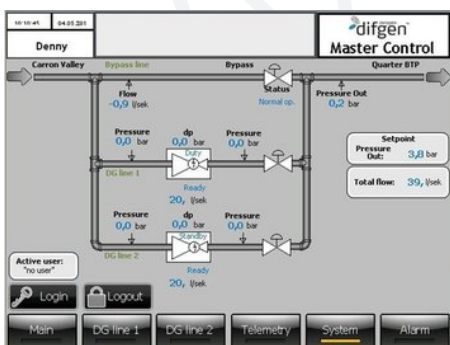
Depth	600mm
Width	800mm
Height	2 000mm
Weight	400kg
Cabinet colour	RAL 7035

Mains connection

ITEM	VALUES	COMMENTS
Mains voltage	380-500V	
Mains frequency	50/60Hz	
Phases	Three	

Environment

ITEM	VALUES	COMMENTS
Ambient temperature operating	0 to 40°C [32 to 104°F]	
Ambient temperature storage	-20 to 70°C [-4 to 158°F]	No condensation allowed
Ambient temperature transport	-20 to 70°C [-4 to 158°F]	No condensation allowed
Relative humidity	5 to 85%	
Altitude	0 to 2 000m above sea level	



Options and alternatives

The options (except from the IP/NEMA cabinet) should not be selected for the CPM Slave panel.

Ordering code: MC_Dx_Px_Vxx_Cxx+(sequence of options)+Zxx

MC OPTIONS

Option	Description	Delivery time	Code
Difgen control	Number of Difgen's to be controlled - Control of two Difgen's are standard. Use this option also if only one Difgen is to be controlled - Control of third TGM/CPM Slave. Includes incorporation in HMI & I/O. Does not include the TGM and CPM Slave. Requires option +Z01	Within standard delivery time	_D2 (std) _D3 (opt)
Regulator control	Control of regulating devices (flow controller/PRV). Cost is for implementing one remotely actuated flow or pressure regulating device, typically PRVs. Includes incorporation in HMI, I/O. Does not include the regulator, solenoids, etc. - Control of 1 controller is included in standard - Control of a total of 2 to 4 controllers (n=2 to 4). Requires option +Z01 if n=4	Within standard delivery time	_P1 (std) _Pn (opt)
Valve control	Control of valves. Cost is for implementing one remotely actuated isolation valve. Includes incorporation in HMI and I/O. Does not include the valve, solenoids, etc. - Control of up to 3 valves is included in standard - Control of a total of 4 to 8 valves (n=4 to 8). Requires option +Z01 if n>=7	Within standard delivery time	_V03 (std) _V0n (opt)
Condition mon. temp inputs	Set of inputs (6) for temperature sensors for the TGM +M01 option (TGM +M01 option is required). Covers up to three Difgen turbines. Requires option +Z02	Within standard delivery time	+T01 (opt)
HMI Panel	10-inch touch screen in cabinet front door	Within standard delivery time	+OP01 (opt)
GPU G59	Grid protection unit/grid safety relay (UK:G59-2). Independent G59/EN60225 protection relay to trip supply circuit breaker - automatic reset	Within standard delivery time	+G01 (opt)
IP/NEMA cabinet	Higher IP/NEMA protection of cabinet (from IP 43). High classes require water-cooled cabinet. Water connection by client	Add 4-6 weeks	N/A
UPS	24 VDC, 50 Ah, for driving external solenoids/valves in case of power loss, etc	Add 4-6 weeks	N/A
Special colour	Special cabinet colour. RAL7035 is standard	Add 1-2 weeks	+RALxxxx (opt)
Grid circuit breaker	Alternative circuit breakers - 110A - 160A - 250A - 400A	Within standard delivery time	_C11 (alt) _C12 (alt) _C13 (alt) _C14 (alt)
Cabinet layout type	Internal parameter used for configuration purposes. Add both options if required by the selected options. - Extended layout 1 - Extended layout 2	N/A	+Z01 +Z02

Options and alternatives (cont.)

COMMUNICATION OPTIONS

Option	Description	Delivery time	Code
Profibus DP	Profibus DP Slave communication interface for SCADA interface. Hardware only included. Setup and configuration are client's responsibility	Within standard delivery time	+B01 (opt)
Profinet DP	Profinet DP Slave communication interface for SCADA interface. Hardware only included. Setup and configuration are client's responsibility	Within standard delivery time	+B02 (opt)
Remote logging	Remote logging interface. 3G modem with top mounted antenna. Setup with safe VPN tunnel from Zeropex logging database.	Within standard delivery time	+L01 (opt)

GENERAL OPTIONS

Option	Description	Delivery time
FAT	Extra day client-witnessed full-scale performance and functionality test in flow laboratory. Does not include client costs for eg travel, accommodation, etc.	Within standard delivery time
SAT	Site acceptance test and commissioning support. One person for 3 days after mechanical and electrical installation is finished. Zeropex travel and accommodation not included. Includes basic training of operators.	N/A
ZCE Training	One-day training course for up to 6 people for concept, installation, regular maintenance and fault finding (Zeropex certified engineer)	N/A

Configuration example

MC_D2_P1_V04_C12+T01+B01+G01+OP01+L01+Z02

- _D2: Control of 2 Difgen's
- _P1: Control of 1 PRV/flow controller
- _V04: Control of 4 isolation valves
- _C12: 160A grid circuit breakers
- +T01: Condition monitoring temperature inputs
- +B01: Profibus DP Slave
- +G01: GPU G59
- +OP01: HMI Panel
- +L01: Remote logging
- +Z02: Triggered by T01

MC_D3_P4_V07_C13+T01+Z01+Z02

- _D3: Control of 3 Difgen's
- _P4: Control of 4 PRV/flow controllers
- _V07: Control of 7 isolation valves
- _C13: 250A grid circuit breakers
- +T01: Condition monitoring temperature inputs
- +Z01: Triggered by D2, P4 and V07
- +Z02: Triggered by T01



Braywick House West
Windsor Road, Maidenhead
SL6 1DN Berkshire
+44 7831 523 518
www.zeropex.com