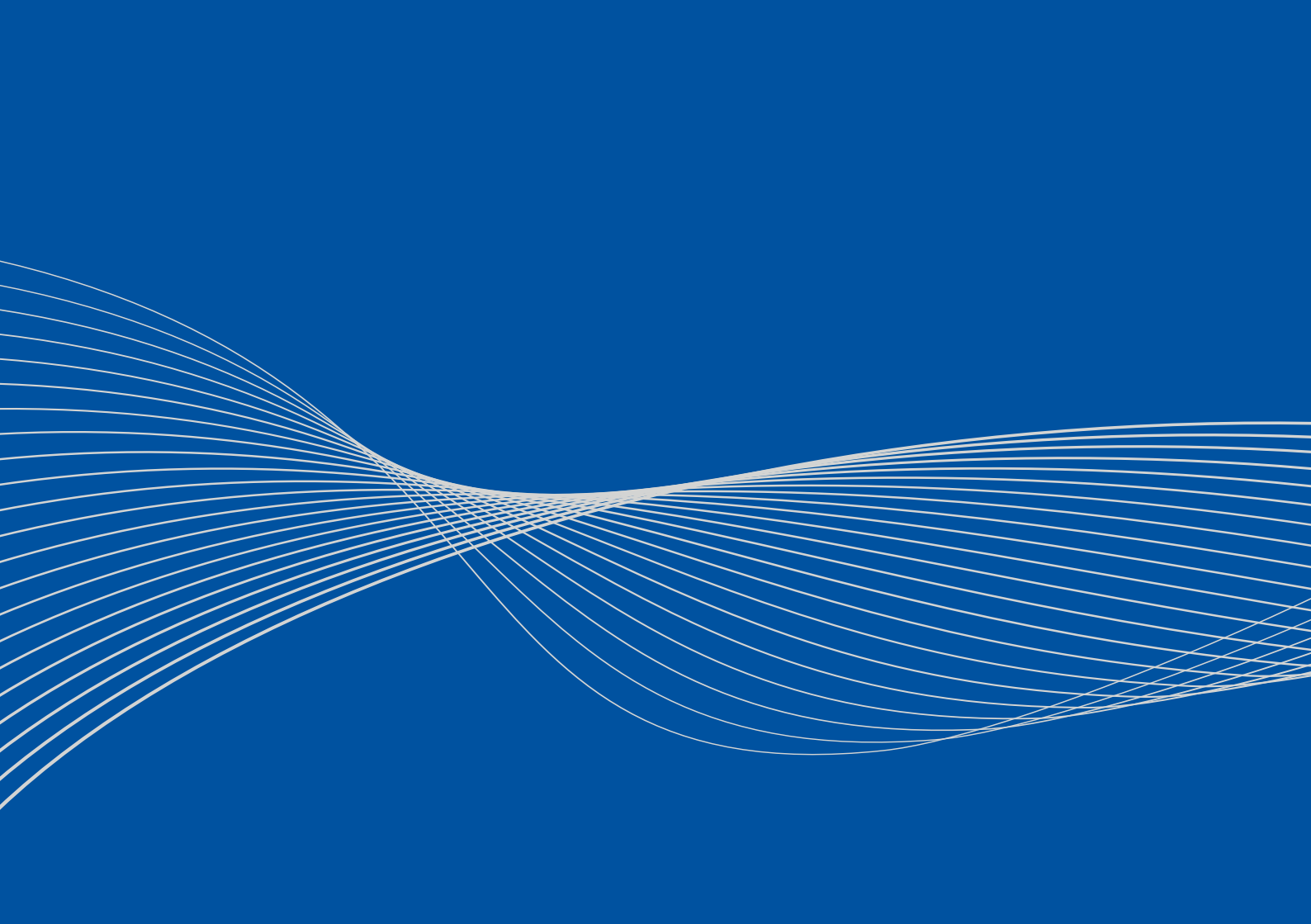
72X-0059-01 Revision A
Versions: IDD 100, 101 & 102

QUICK GUIDE
doblePRIME
IDD™

Intelligent Diagnostic Device

DOBLE ENGINEERING COMPANY



IDD™

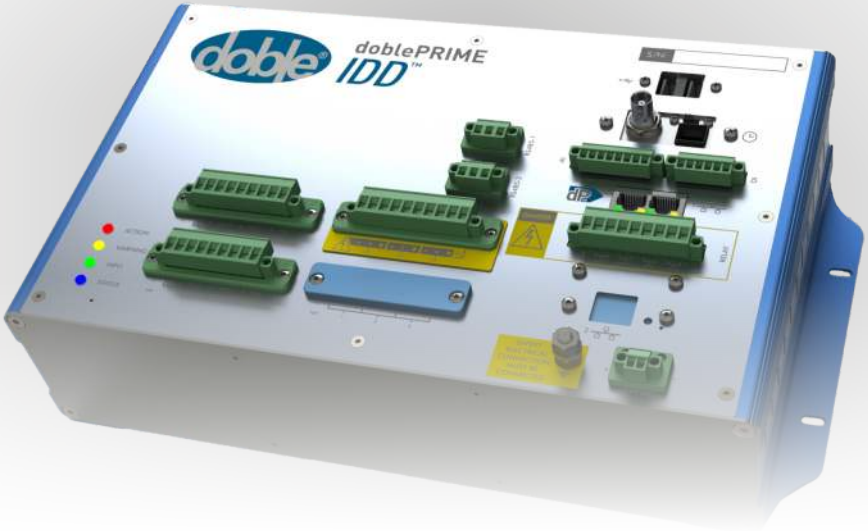
product outline:

The doblePRIME IDD™ Bushing Monitor detects deterioration in bushings, finding abnormalities in the insulation and issuing actionable alerts.

The doblePRIME IDD Bushing Monitor provides leakage current and phase analysis for up to 12 bushings, measuring parameters for each bushing individually and together.

This intelligent device uses its embedded Expert System to provide you with notifications and alarms based on comparisons between off-line and calculated on-line data. Designed to fit your monitoring program, the doblePRIME IDD Bushing Monitor can operate as a standalone device or as part of a doblePRIME Condition Monitoring Platform.

Over almost 20 years of successful monitoring Doble has identified two distinct failure modes – rapid onset and graceful decay – and have documented cases of averting bushing failures in both modes.



- Capture bushing current waveforms in real time
- Calculates values for power factor and capacitance
- Records data at user specified intervals, or ad hoc
- Displays alerts locally and remotely
- Intelligent Expert System learns what is normal for your bushings
- Notifications based on latest analysis techniques – and built on Doble's decades of experience in the field

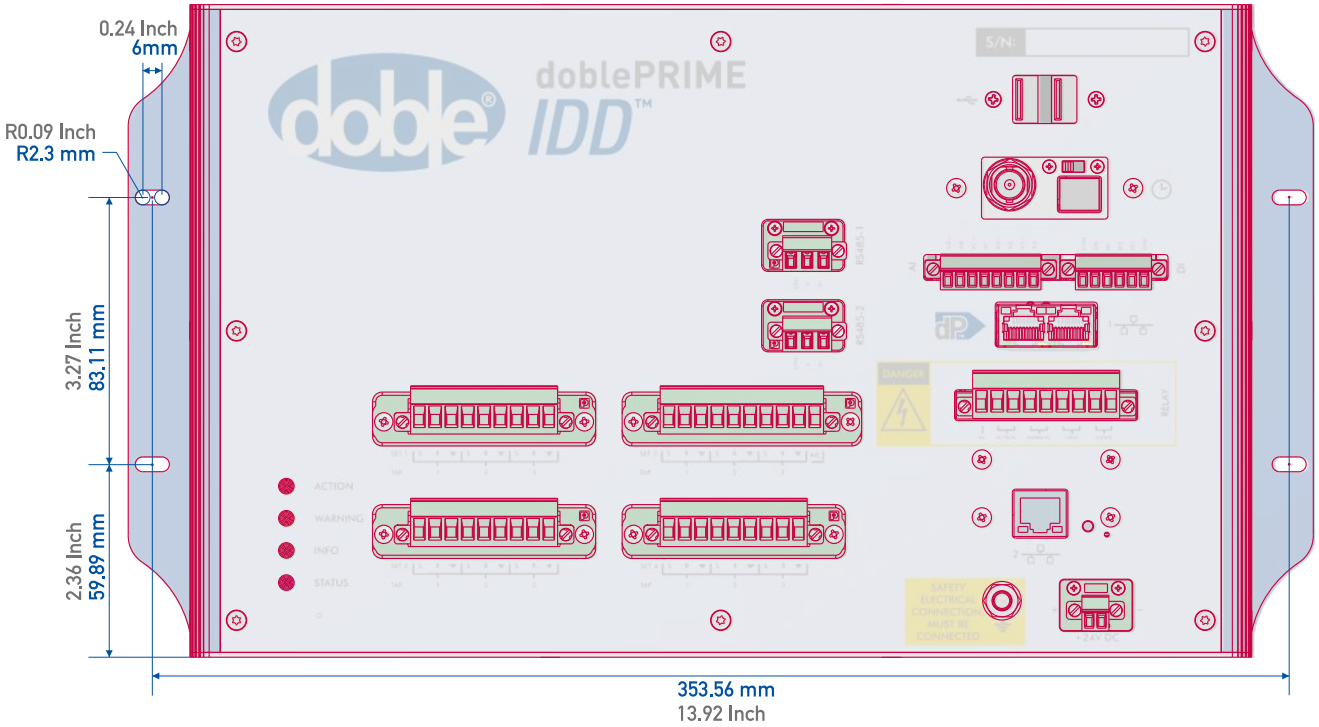
Installation options:

The doblePRIME IDD is provided in an anodized aluminum housing, compatible with other doblePRIME modules for ease of installation.

The installation options are:

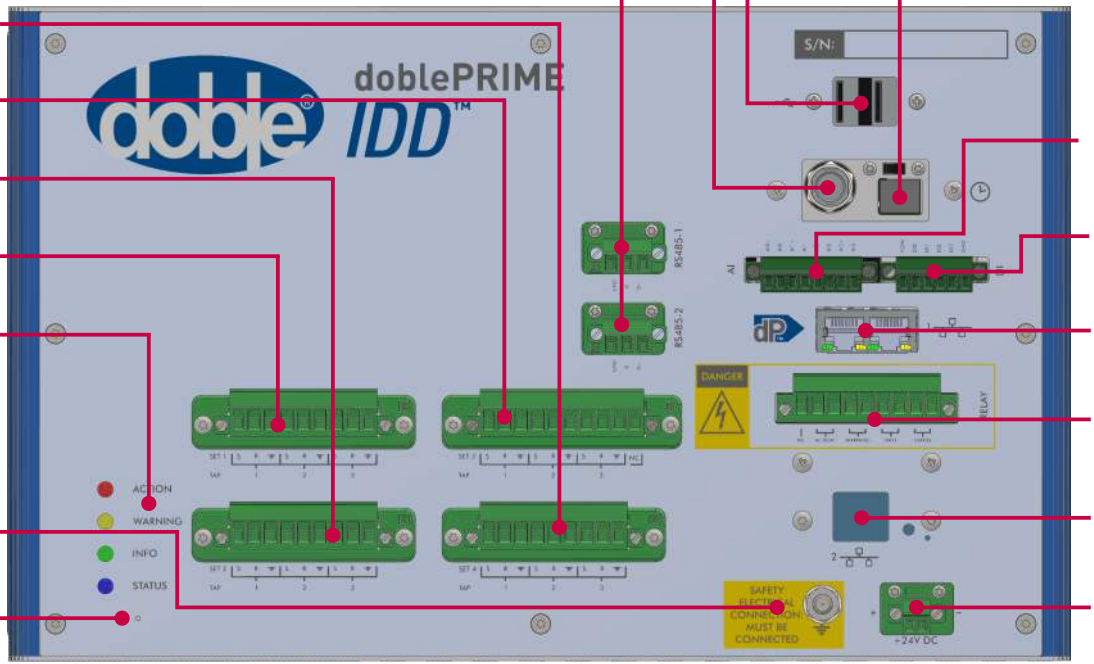
- Panel Mount: using brackets provided.
- DIN Rail Mounting: DIN Rail bracket is available as part of the 030-2176-01 Kit
- Free Standing: Rubber feet can be supplied as part of the 030-2176-01 Kit

Panel Mount hole locations



Identify Connections

Help with identifying the connections found on the IDD Intelligent Diagnostic Device.



9. RS485
8. Timing input: IRIG-B BNC connector
10. USB interface
7. Timing input: 1pps fibre
15. Bushing Set 4 — Blanking Plate
14. Bushing Set 3 — Voltage Input
13. Bushing Set 2
12. Bushing Set 1
11. Indicator LED
Ground Stud: At least one ground stud MUST be connected to the equipment ground
Reset: pinhole
5. Analogue input
6. Digital input
4. LAN 1
3. Relay output
2. Optional Ethernet
1. Power supply

IDD Version: 100

Connection Details:

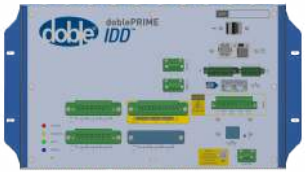
1. Power supply: 24VDC 1A
2. Optional Ethernet interface for IEC-61850 (available Q4 2017)
3. Relay output: 4 x relay, 250VAC 5A, switched according to alert conditions detected by IDD a. ACTION (NC); b. WARNING (NC); c. INFO (NC); d. STATUS (NO)
4. LAN 1: Ethernet switch, access to doblePRIME user interface (http) and communication protocols (Modbus TCP, DNP3)
5. Analogue input: 4 x 4-20mA, for general purpose measurements of analogue values, e.g. DGA, temperature, pressure, etc.
6. Digital input: sink or source, for general purpose measurement of switch state, e.g. pumps, fans, etc.
7. Timing input: 1pps fibre, from optional Doble GPS timing source
8. Timing input: IRIG-B BNC connector, from existing station timing system
9. RS485: 2-wire, Modbus Master/Slave or DNP3 Master/Outstation, for communication with supervisory systems or monitoring devices
10. USB interface, options: a. WiFi access point; b. Firmware update; c. Data display
11. Indicator LED: switched according to alert conditions detected by IDD a. ACTION (flashing red); b. WARNING (flashing yellow); c. INFO (flashing green); d. STATUS (flashing blue)
12. Bushing Set 1: 3 x bushing leakage current measurement
13. Bushing Set 2: 3 x bushing leakage current measurement
14. Bushing Set 3: 3 x bushing leakage current measurement
15. Bushing Set 4: 3 x bushing leakage current measurement

Quick Connection Reference:

	doblePRIME Instrument					
	100	101	102			
Bushing Inputs	12	6	6			
Voltage Inputs	✗	3	✗			
4-20mA Inputs	4	4	✗			
Digital Inputs	4	4	✗			
Alert Relay	4	4	4			
Alert LED	4	4	4			
GPS Timing*	✓	✓	✗			
Ethernet Switch	✓	✓	✓			
USB 2.0	✓	✓	✓			
RS485	2	2	1			

* Additional equipment might be required

IDD Version: 101



IDD Version: 102

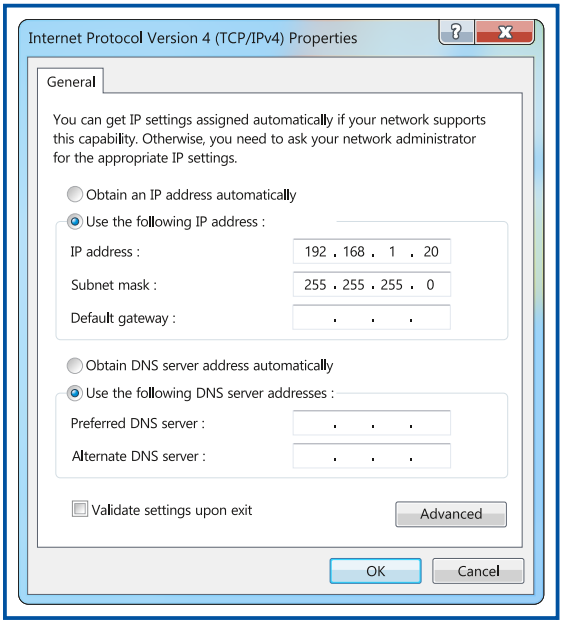
Default IP Configuration

Section A: Login Details

You must have this information to log in:

- doblePRIME IP address - 192.168.1.234
- Username - ad
- Password - idd2ad

If you need any of this information, consult your system administrator.



Section B: Login Procedure

To log in to doblePRIME:

1. When the front panel of the IDD show blue and green LEDs (see page 4; 11. Indicator LED) the device has finished booting, this normally takes approximately 1 minute, the IDD will now require an additional 30 seconds to start communicating.
2. Connect your computer to the IDD using an ethernet cable.
3. Set your computer IP address and subnet to match the IDD (see image; left)
4. Open a browser and enter the IP address.
5. Enter your username and password.
6. (Optional) If this is the first time you have logged in, Doble recommends that you change your password immediately. Do not continue to use the password provided by Doble.
7. Click Sign In.

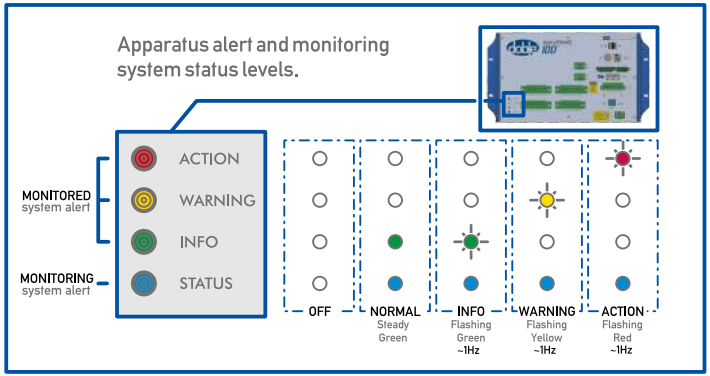
Section C: Reset Procedure

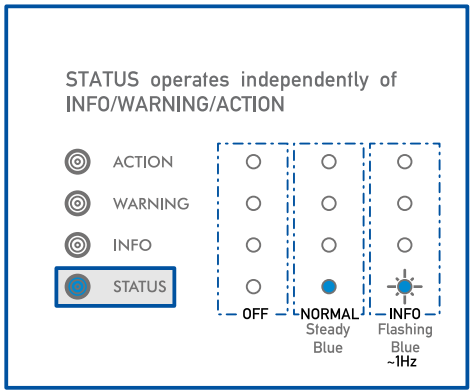
Details of the procedure:

1. Perform the IP reset on the IDD by inserting and holding a paperclip or similar in the pinhole (see pinhole location on page 4; Identify Connections); the LEDs will go out then light up in sequence bottom to top, when all the LEDs start flashing at the same time you can release the paperclip from the pinhole.
2. After the paperclip is removed out of the pinhole the IDD will perform a reset itself.
3. Go to section B to continue.

Troubleshooting Indicators

A normal state is indicated by the green and blue indicator LEDs being lit.





OPERATION:

BLUE -
indicates system active

STEADY GREEN -
indicates Normal (healthy) state.

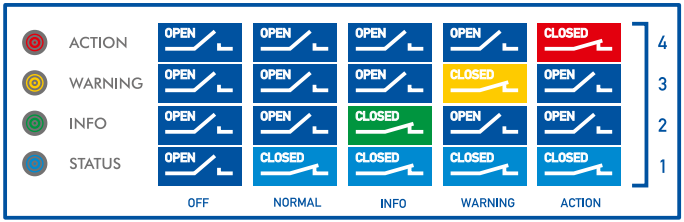
FLASHING GREEN -
indicates transition to INFO.
INFO provides information
.

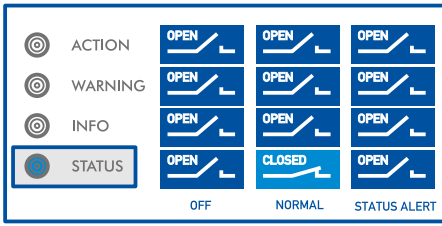
FLASHING YELLOW -
indicates WARNING.
Requires further investigation.

FLASHING RED -
indicates ACTION.
Requires immediate attention!

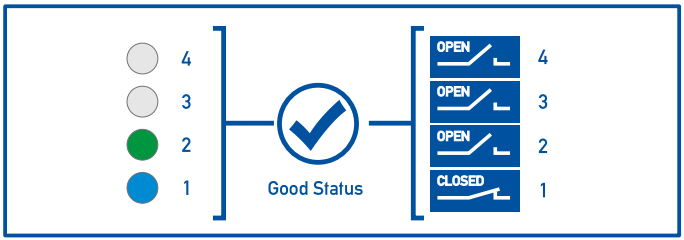
RELAY:

OPERATION in NORMAL condition:
INFO/WARNING/ACTION - Normally OPEN
STATUS - Normally Closed





Note that STATUS ALERT is the same position as OFF, because at system level, OFF indicated equipment failure.



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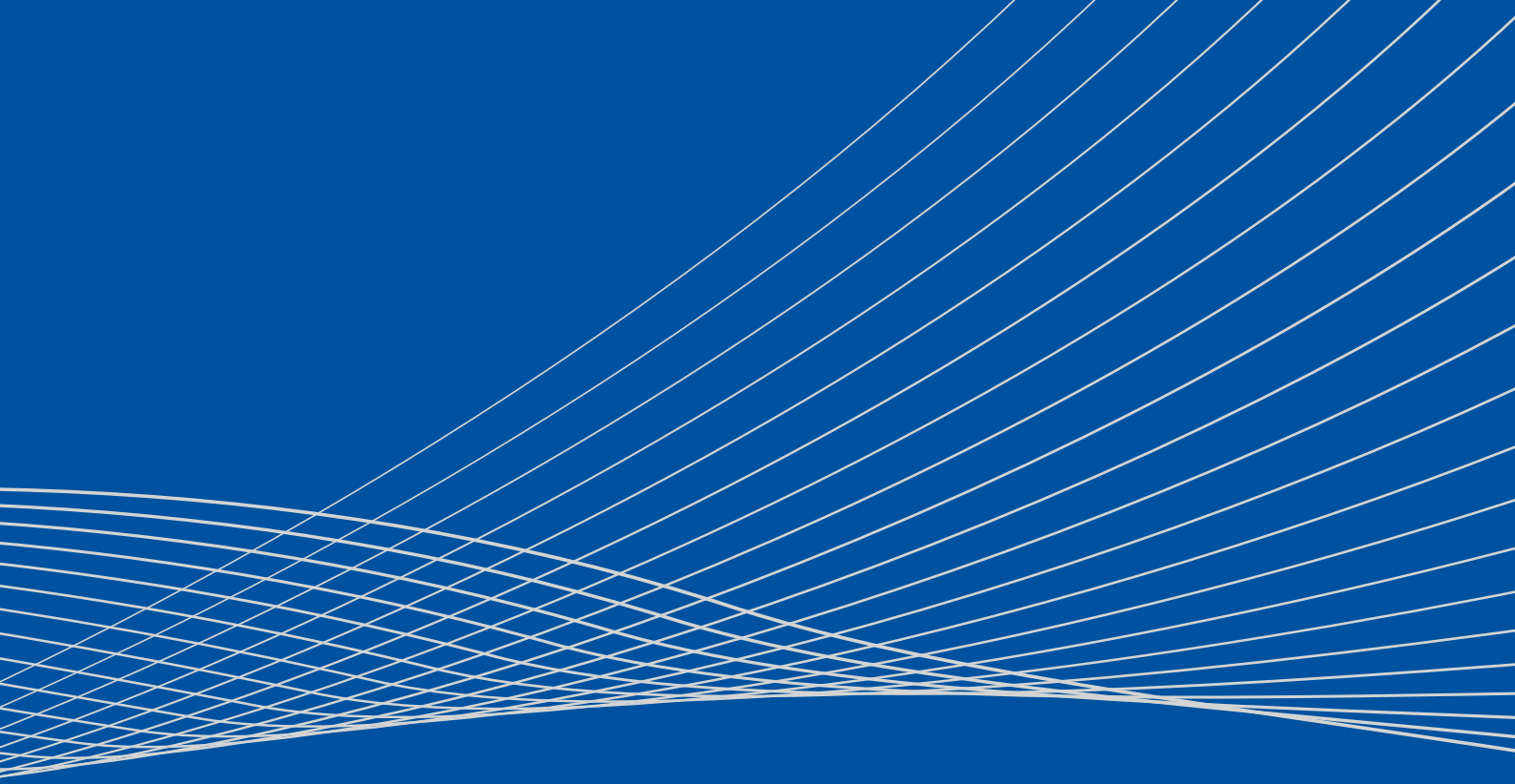
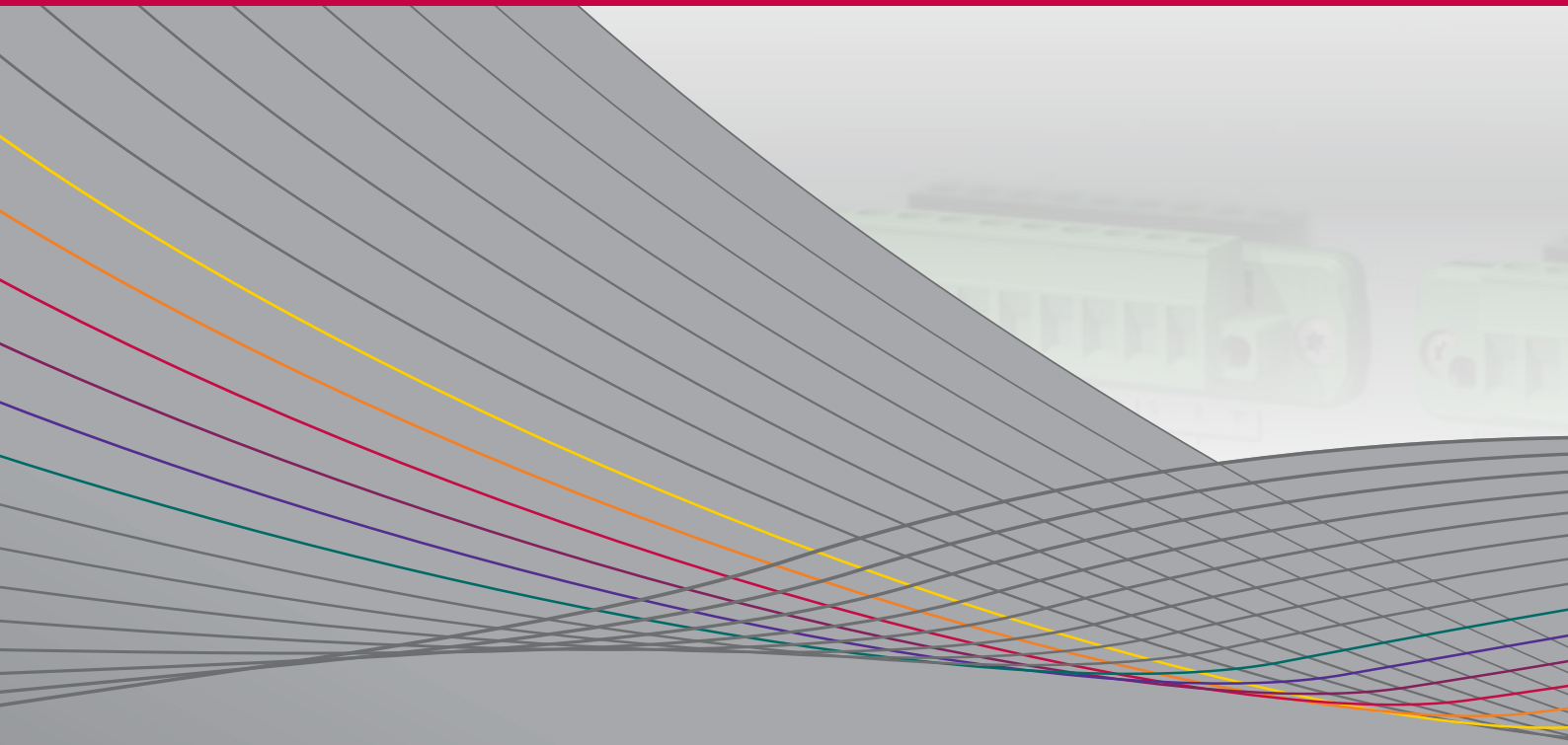


Doble Engineering Company Worldwide Headquarters
85 Walnut Street
Watertown, MA 02472 USA
tel +1 617 926 4900
fax +1 617 926 0528



EXPERIENCE.
KNOWLEDGE.
INSIGHT.

SOLUTIONS BUILT ON A CENTURY
OF INNOVATION AND EXPERTISE.

IDD