

# BD Phoenix™ Automated Microbiology

Accurately<sup>1</sup> detect  
antimicrobial resistance  
with confidence



# Compact integration of ID/AST systems

The BD Phoenix™ M50 Instrument with the BD Bruker MALDI Biotyper™ Instrument

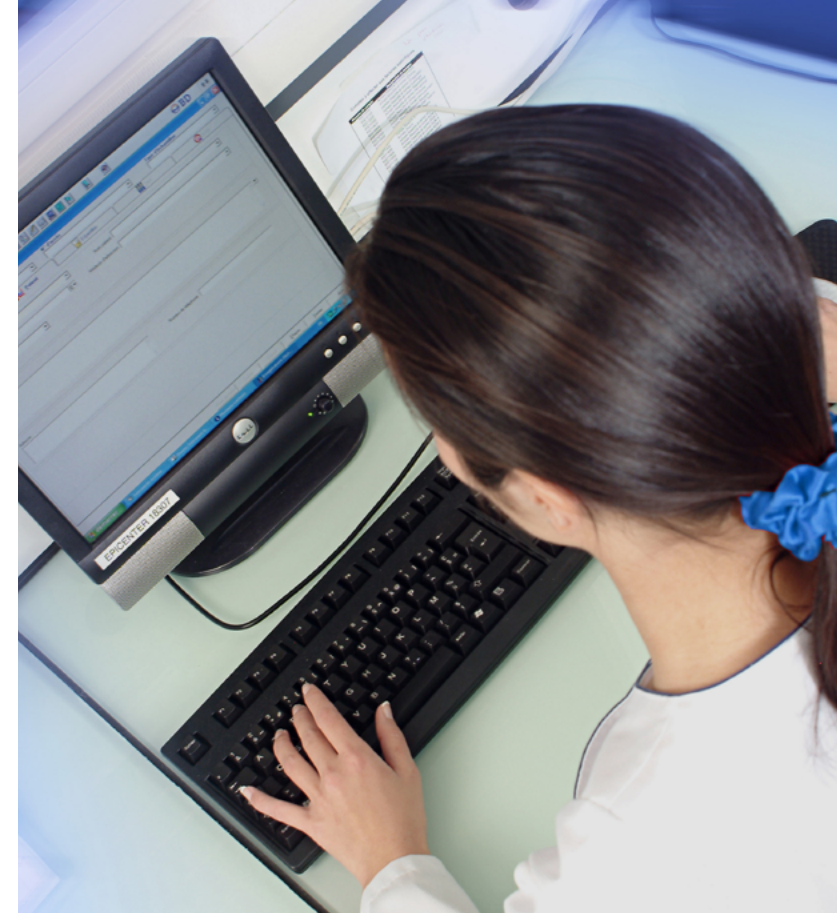
Identification

Accuracy

Efficiency

Reporting

State of the art Mass Spectrometry identification coupled with accurate resistance<sup>1</sup> detection not only supports your goal to improve laboratory efficiency, but also gives you the confidence you need to accelerate ID result reporting.<sup>2</sup>



The BD EpiCenter™ Data Management System offers an easy and intuitive plate mapping solution. It also enables smooth integration of Bruker-generated IDs with BD Phoenix™ M50 instrument-generated MICs for a complete susceptibility profile.

# Emerging resistance detection

For timely therapeutic intervention and infection control:



Confirm known resistance



Detect emerging resistance



Detect and classify CPOs



Re-configuring unnecessary

The BD Phoenix™ System has demonstrated performance<sup>1</sup> in detecting resistance. This aids in a timely and appropriate patient therapeutic intervention.

The BD Phoenix™ M50 system panels test for several resistance markers,<sup>2</sup> such as:

HLAR - High Level Aminoglycoside Resistant Enterococcus

iMLSb - Inducible Clindamycin Resistance

MRSA - based on Oxacillin Interpretation with Staphylococcus aureus

mecA - detection of mecA-mediated resistance in Staphylococcus aureus

BL-Staph  $\beta$ -Lactamase (Nitrocefin based test)

VRSA - Vancomycin- Resistant Staphylococcus aureus

VRE - based on Vancomycin interpretation

CPO - Carbapenemase-producing organism

ESBL - Offered on Gram-negative panels



<sup>1</sup> Depending on BD Phoenix™ panel type and organism identification.

Health care institutions need to be able to accurately detect and intervene to prevent the spread of Carbapenemase-producing organisms (CPOs), thus contributing in the preservation of current antibiotic options. BD Phoenix™ CPO Detect Test provides fast, accurate, and efficient detection and confirmation of CPOs to support infection control.<sup>3</sup>

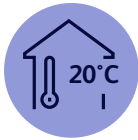




# Workflow

## Ease of use

BD Phoenix™ workflow is based on advanced panel and instrument designs that ensure:



All panels and broths are stored at room temperature



Flexible inoculum density (0.25 or 0.5 McFarland)



No reagent addition to panel, allowing an effortless workflow and simplified logistics



No off-line tests, ensuring optimised workflow



Panels are sealed after inoculation, ensuring safe handling



ID-only, combo or AST-only panels available to suit your laboratory needs





# BD Phoenix™ AP workflow efficiency

## The BD Phoenix™ M50 Instrument with the BD Phoenix™ AP Instrument



Reduce panel preparation time



Incorporate automated nephelometry

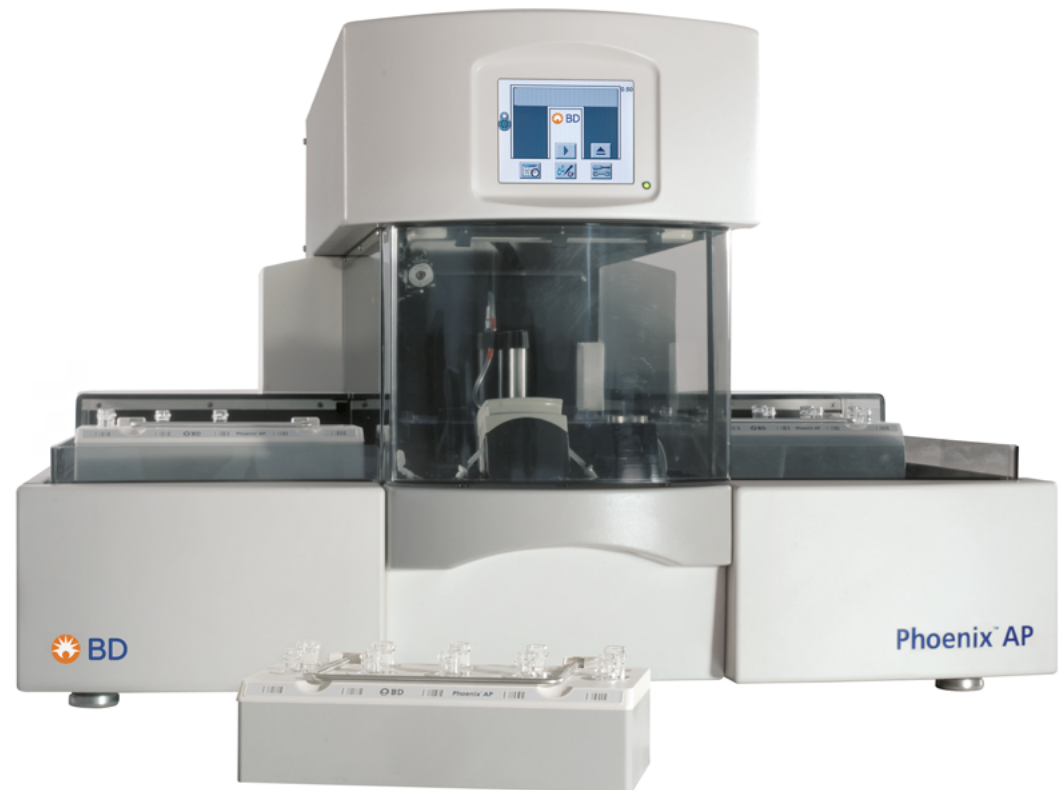


Standardise inoculum preparation

BD Phoenix™ AP complements BD Phoenix™ M50 by reducing panel preparation time<sup>4</sup>, standardising inoculum preparation and incorporating automated nephelometry.

The BD Phoenix™ AP automated inoculation preparation instrument may help to reduce sample preparation workflow burdens, reducing total hands-on time per sample by 50% compared to manual BD Phoenix™ preparation and by an average of 20% compared to selected competitive products.<sup>4</sup>

The BD Phoenix™ AP instrument is capable of processing a starting McFarland of 0.20 to 4.0 to the appropriate testing McFarland, and can increase the consistency of the isolate preparation.



# BD EpiCenter™ Data Management System

An integral component of the BD Phoenix™ M50, generate real-time data that may help impact patient care:



Timely monitoring, analysis and communication

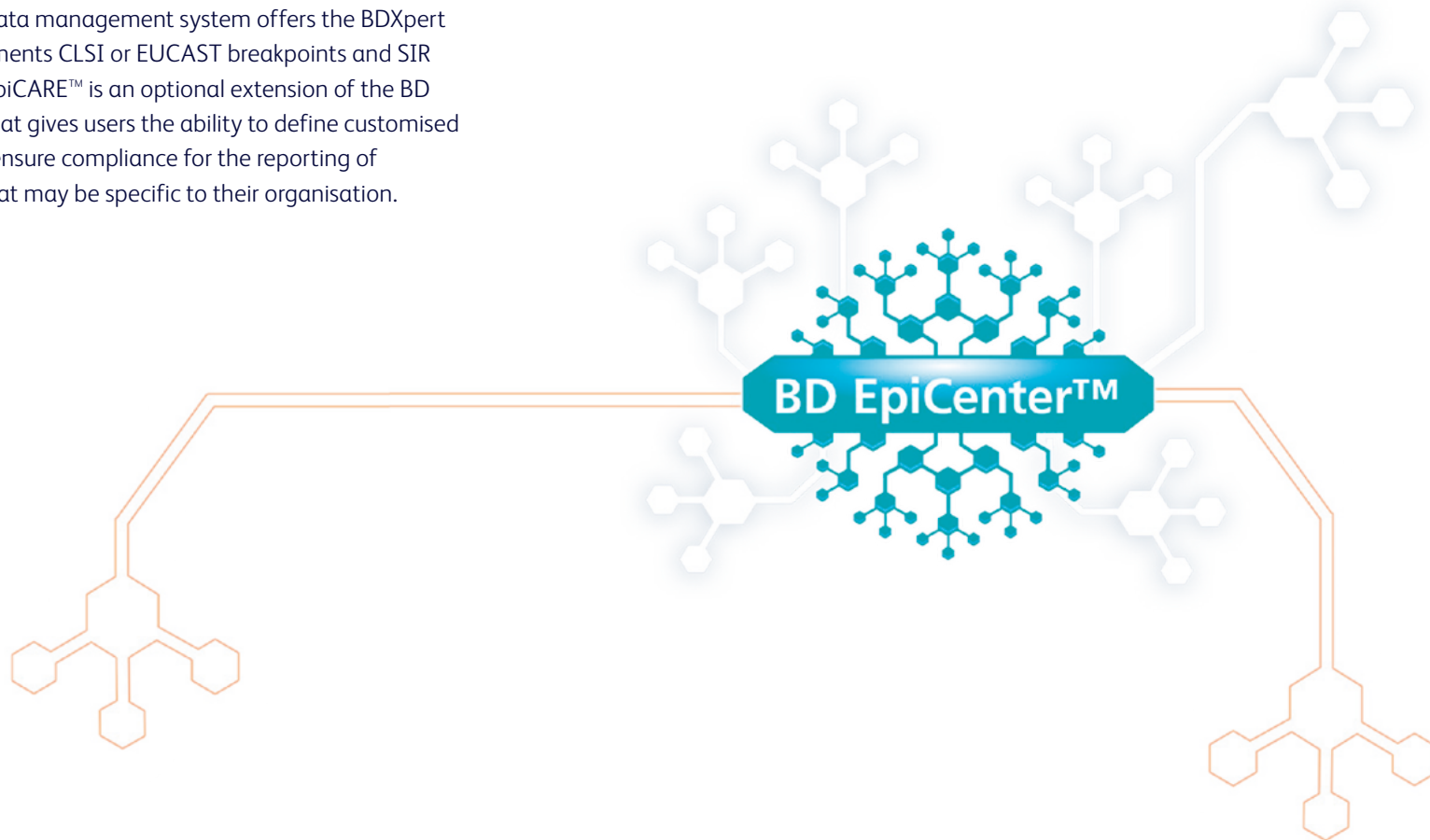


Reduction of labour-intensive tasks

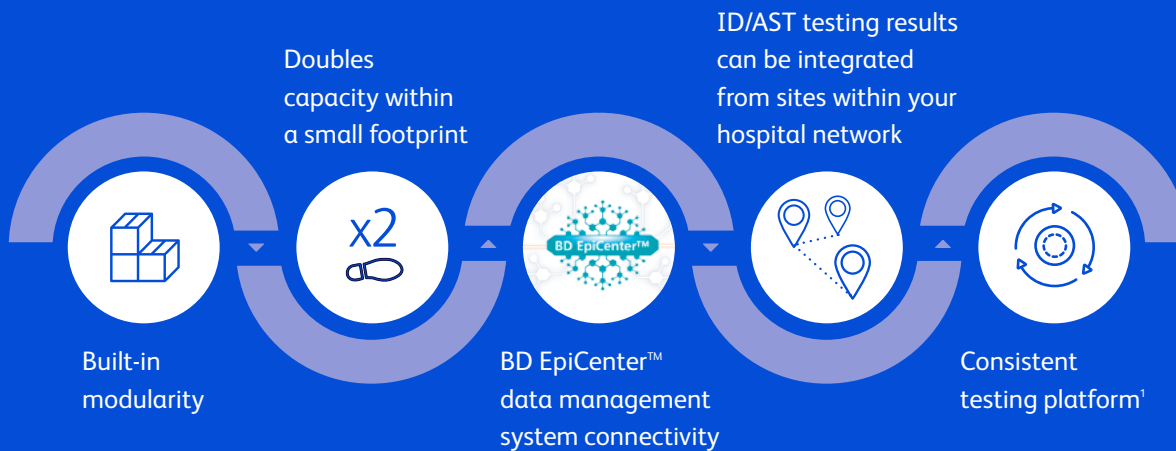


Rapid communication of Maldi ID results

The BD EpiCenter™ data management system offers the BDxpert system, which implements CLSI or EUCAST breakpoints and SIR interpretations. BD EpiCARE™ is an optional extension of the BD EpiCenter™ system that gives users the ability to define customised rules and actions to ensure compliance for the reporting of microbiology data that may be specific to their organisation.



The BD Phoenix™ M50 system delivers the performance<sup>1</sup>, connectivity and functionality required by clinical laboratories today, in a compact and modular format.



## BD Phoenix™ M50 Instrument

Experience built-in modularity with the BD Phoenix™ M50 ID/AST system. Whether your ID/AST testing volume is increasing or highly variable, the BD Phoenix™ M50 Instrument adapts easily by doubling capacity within a small footprint. It's as simple as stack, plug and work.

The BD Phoenix™ M50 has been designed with a touch screen interface available in several languages and embedded with the BDXpert system. Up to two units can be stacked to best fit different testing needs while minimal maintenance is required (no reagents, pumps or waste to maintain).





# BD Phoenix™ M50 Instrument

Demonstrated performance<sup>1</sup>, connectivity and functionality, in a compact and modular format for optimal flexibility and performance in an identification and susceptibility test system.

## Instrument specifications

Physical Dimensions and Power Requirements	BD Bruker MALDI Sirius™	Single BD Phoenix™ M50 Instrument with PC	BD Phoenix™ AP System
Height	107 cm	53.5 cm	61 cm
Width	50 cm	136 cm	84 cm
Depth	71 cm	76.5 cm	81.5 cm
Clearance (left)	50 cm	7.62 cm	7.6 cm
Clearance (front)	50 cm	45.72 cm	40.7 cm
Weight	75 kg	54.5 kg	90.7 kg
Power Requirements	220-230VAC ± 10%, 50 Hz 10 amp Circuit	90-264 VAC; 47-63Hz 15 amp circuit	100-240 VAC; 50-60Hz 6.3 amp circuit





1. Giani T, Morosini MI, D'Andrea MM, García-Castillo M, Rossolini GM, Cantón R. Assessment of the Phoenix™ automated system and EUCAST breakpoints for antimicrobial susceptibility testing against isolates expressing clinically relevant resistance mechanisms. *Clin Microbiol Infect.* 2012 Nov;18(11):E452-8. doi: 10.1111/j.1469-0691.2012.03980.x. Epub 2012 Aug 22. PMID: 22909279.
2. K. E. Tan, B. C. Ellis, R. Lee, P. D. Stamper, S. X. Zhang and K. C. Carroll. Prospective Evaluation of a Matrix-Assisted Laser Desorption Ionization–Time of Flight Mass Spectrometry System in a Hospital Clinical Microbiology Laboratory for Identification of Bacteria and Yeasts: a Bench-by-Bench Study for Assessing the Impact on Time to Identification and Cost-Effectiveness. *Journal of Clinical Microbiology.* October 2012 Volume 50 Number 10
3. Croxatto et al, Evaluation of the BD Phoenix™ CPO detect the detection of carbapenemase producers. *Clinical Microbiology and Infection* 26 (2020).
4. Junkins A, et al. Comparison of BD Phoenix™ AP Workflow with Vitek 2. *J. Clin. Microbiol.* 2010. 48 (5): 1929-1931

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# BD Phoenix™ Panels

Giving you confidence  
in accurate detection<sup>1</sup> of  
antimicrobial resistance





# BD Phoenix™ panels

Flexible panel formats stored at room temperature:

- ID-only - Gram positive, Gram negative, Yeast
- AST-only - Gram positive, Gram negative, Emerge Panel
- Combo - Gram positive, Gram negative, Strep



## BD Phoenix™ Emerge extended AST-only panels

- True MIC derived from dilutions using doubling antibiotic concentrations
- Embedded detection of resistance markers

ID: Identification

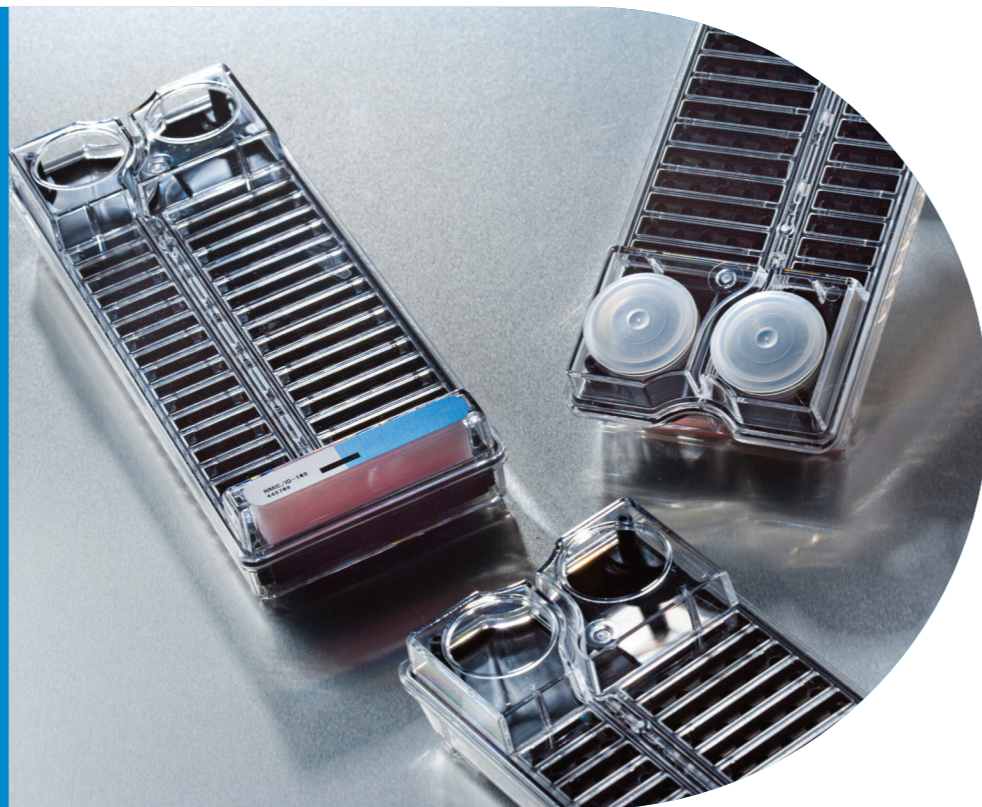
AST: Antimicrobial Susceptibility Testing

Combo: Combined ID and AST

## BD Phoenix™ Combo and AST-only

- Multiple combinations of Gram-negative and Gram-positive panels to fit different needs
- Gram-negative fermenters, nonfermenters and urine panels
- Two formats of Gram-positive panels for Enterococcus and Staphylococcus
- Most products available in combo (ID / AST) and AST-only format

All Phoenix™ panels comply with either EUCAST or CLSI guidelines.



# Accurate detection<sup>1</sup> of antimicrobial resistances with new drugs and concentrations



## Highlights: Gram-negative panels

### Penicillin

Amoxicillin / Clavulanate up to 32 / 2 µg / ml for SIR determination of bacteria responsible for uncomplicated UTI

### Ceftolozane–tazobactam and Ceftazidime–avibactam

Third-generation cephalosporin and beta-lactamase inhibitor combination with activity against extended-spectrum beta-lactamase (ESBL) producers, carbapenem-resistant Enterobacteriaceae (CRE), and *Pseudomonas aeruginosa*<sup>2,5</sup>

### Carbapenem

Lower concentrations allow easier detection of nonsusceptible carbapenem organisms and resistances of clinical and / or epidemiological importance<sup>6</sup>

- Ertapenem and Imipenem range starting from 0,25 µg
- Meropenem starting from 0,125 µg in line with the screening cut-off proposed by EUCAST

### Meropenem/vaborbactam

Important therapeutic strategy in patients with MDR Gram-negative infections and listed in the WHO's list of essential medicines, because of its activity against priority 1 antibiotic-resistant pathogens.<sup>2</sup>

### Tigecycline

First member of the glycydrylins and increasingly used for the treatment of multidrug-resistant organisms<sup>3</sup>



## Highlights: Gram-positive panels

### Cephalosporin

Ceftaroline: an advanced-generation cephalosporin that has bactericidal activity against Gram-positive pathogens including MRSA strains<sup>7</sup>

### Tigecycline

Activity against a wide variety of Gram-positive including multidrug-resistant strains<sup>3</sup>

# BD Phoenix™ Emerge

## AST-only extended panels for wider scope in the detection of antimicrobial resistance

- Largest number of panel wells of any automated ID/AST system
- Accurate detection of carbapenem-resistant Enterobacteriaceae<sup>6</sup>
- More drugs and wide range of serial two-fold dilutions for many key antibiotics
- Real MIC detection
- The BDxpert™ system and BD EpiCenter™ systems for better detection, expertise and real-time communication

Gram Negative Emerge Panels							
BD reference number	449001	449023	449025	449041	449056	449727	449728
Panel Name	NMIC-417	NMIC-500	NMIC-502	NMIC-501	NMIC-505	NMIC-474	NMIC-475
Guideline	EUCAST	CLSI	EUCAST	CLSI	EUCAST	EUCAST	EUCAST
Antimicrobial (µg/ml) concentration range							
<b>PENICILLIN</b>							
Ampicillin (AM)	2-8	4-16	2-8	4-16	4-16	2-8	2-8
Amoxicillin (AMX)	-	-	-	-	4-32	-	-
Piperacillin (PIP)	4-64	-	4-64	-	-	-	-
Mecillinam (MEC)	2-8	-	2-8	-	-	-	2-8
Temocillin (TEM)	4-32	-	4-32	-	-	4-32	4-16
<b>β-LACTAM COMBINATION AGENT</b>							
Amoxicillin-Clavulanate (AMC)	-	-	-	-	-	-	-
Amoxicillin-Clavulanate (f) (AXC)	2-32	-	2-32	-	2-32	2-32	2-32
Ampicillin-Sulbactam (f) (SXA)	-	-	-	-	1-4	-	-
Ampicillin-Sulbactam (SAM)	-	4-16	-	4-16	-	-	-
Ceftazidime-Avibactam (CZA)	-	0.25-8	0.25-8	0.25-8	0.25-16	0.25-8	0.25-8
Ceftolozane-Tazobactam (CT)	-	-	-	1-8	0.5-2	0.5-4	0.5-4
Meropenem-Vaborbactam (MEV)	-	-	-	-	-	2-8	2-8
Piperacillin-Tazobactam (TZP)	4-64	4-64	4-64	4-64	4-32	4-64	4-16
Ticarcillin-Clavulanate (TIM)	4-64	-	-	-	-	-	-
<b>CEPHEMS</b>							
Cefazolin (CZ)	-	2-16	-	2-16	4-32	-	-
Cefepime (FEP)	1-16	1-16	1-16	1-16	1-16	1-8	1-8
Cefixime (CFM)	0.5-2	-	0.5-2	-	0.5-2	-	-
Cefotaxime (CTX)	-	-	-	-	1-4	-	-
Cefoxitin (FOX)	4-16	4-16	-	4-16	-	4-16	-
Ceftazidime (CAZ)	-	0.5-16	-	-	-	-	-
Ceftazidime (CAZ)	-	0.5-16	0.5-8	0.5-16	1-16	0.5-16	0.5-8
Ceftriaxone (CRO)	0.5-4	0.5-4	0.5-4	0.5-4	1-4	0.5-4	1-4
Cefuroxime (CMX)	2-8	4-16	2-8	4-16	4-16	2-8	2-8
Cephalexin (CN)	4-16	-	4-16	-	-	-	4-16
<b>MONOBACTAMS</b>							
Aztreonam (ATM)	1-16	1-16	1-16	1-16	-	1-16	1-16
<b>CARBAPENEMS</b>							
Ertapenem (ETP)	0.25-1	0.25-1	0.25-1	0.25-1	0.25-2	0.25-1	0.25-1
Imipenem (IPM)	0.25-8	0.25-8	0.25-8	0.25-8	0.25-8	0.25-8	0.25-8
Meropenem (MEM)	0.25-8	0.25-32	0.125-8	0.25-32	0.125-8	0.125-16	0.125-8
<b>LIPOPEPTIDES</b>							
Colistin (CL)	1-4	1-4	0.5-2	1-4	1-4	0.5-4	0.5-4
<b>AMINOGLYCOSIDES</b>							
Amikacin (AN)	4-16	4-32	4-16	4-32	4-32	4-16	4-16
Gentamicin (GM)	1-4	2-8	1-4	2-8	1-4	1-4	1-4
Tobramycin (NN)	1-4	-	1-4	-	2-8	1-4	1-4
<b>TETRACYCLINES</b>							
Minocycline (MI)	-	1-16	-	1-16	-	-	-
Tetracycline (TE)	-	-	-	-	-	-	-
<b>GLYCYLCYCLINE</b>							
Tigecycline (TGC)	0.5-2	1-4	0.5-2	1-4	1-4	0.5-2	0.5-2
<b>PHENICOL</b>							
Chloramphenicol (C)	-	-	-	-	-	-	-
<b>FLUOROQUINOLONES</b>							
Ciprofloxacin (CIP)	0.25-1	0.0625-2	0.0625-1	0.0625-2	0.0625-1	0.0625-1	0.0625-1
Levofloxacin (LVX)	0.5-2	1-4	0.5-2	1-4	0.5-8	0.25-1	0.25-1
Norfloxacin (NOR)	0.5-2	2-8	-	2-8	-	0.5-2	0.5-2
Ofloxacin (OFX)	-	-	-	-	0.5-2	-	-
<b>QUINOLONE</b>							
Nalidixic Acid (NA)	4-16	-	-	-	-	-	-
<b>FOLATE PATHWAY ANTAGONIST</b>							
Trimethoprim (TMP)	1-4	-	-	-	-	-	1-4
Trimethoprim-Sulfamethoxazole (SXT)	1-4	0.5-2	1-4	0.5-2	1-8	1-4	1-4
<b>NITROFURAN</b>							
Nitrofurantoin (FM)	16-64	32-128	16-64	32-128	-	16-64	16-64
<b>FOSFOMYCINS</b>							
Fosfomycin w/G6P (FF)	16-128	16-128	16-128	16-128	16-64	16-64	16-64
<b>OTHER</b>							
CPO detect	No	Yes	Yes	Yes	Yes	Yes	Yes
CPO detect Ambler class	No	Yes	Yes	Yes	Yes	Yes	Yes
ESBL	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Gram Positive Emerge Panels		
BD reference number	448420	449009
Panel Name	PMIC-84	PMIC-96
Guideline	CLSI	EUCAST
Antimicrobial (µg/ml)		
<b>PENICILLIN</b>		
Ampicillin (AM)	0.25-16	1-16
Penicillin G (P)	0.0625-8	0.0625-0.25
Oxacillin (OX)	0.125-4	0.25-2
<b>β-LACTAM COMBINATION AGENT</b>		
Amoxicillin-Clavulanate (AMC)	2-8	-
<b>CEPHEMS</b>		
Cefazolin (CZ)	2-8	-
Cefoxitin (FOX)	2-8	2-8
Ceftaroline (CPT)	-	0.125-1
Moxalactam (MOX)	-	2-16
<b>GLYCOPEPTIDES</b>		
Vancomycin (VA)	0.5-16	0.5-8
Teicoplanin (TEC)	1-16	0.5-8
<b>LIPOPEPTIDES</b>		
Daptomycin (DAP)	0.5-4	0.25-4
<b>AMINOGLYCOSIDES</b>		
Gentamicin (GM)	0.5-8	1-4
Gentamicin-Syn (GMS)	500	500
Kanamycin (K)	-	8-32
Kanamycin-Syn (KS)	-	250
Tobramycin (NN)	-	1-4
Streptomycin-Syn (STS)	1000	-
<b>MACROLIDES</b>		
Erythromycin (E)	0.25-4	0.25-4
<b>TETRACYCLINES</b>		
Tetracycline (TE)	-	0.5-2
Doxycycline (D)	0.5-4	-
<b>FLUOROQUINOLONES</b>		
Ciprofloxacin (CIP)	0.5-2	0.5-4
Levofloxacin (LVX)	-	0.5-4
Moxifloxacin (MXF)	0.25-2	0.25-2
Norfloxacin (NOR)	1-16	-
<b>NITROFURAN</b>		
Nitrofurantoin (FM)	32-128	16-64
<b>LINCOSAMIDES</b>		
Clindamycin (CC)	0.125-4	0.25-1
<b>FOLATE PATHWAY ANTAGONIST</b>		
Trimethoprim (TMP)	0.5-8	0.5-4
Trimethoprim-Sulfamethoxazole (SXT)	0.5-8	0.5-4
<b>ANSAMYCINS</b>		
Rifampin (RA)	0.25-8	0.25-2
<b>FOSFOMYCINS</b>		
Fosfomycin w/G6P (FF)	16-64	16-64
<b>OXAZOLIDINONES</b>		
Linezolid (LZD)	2-8	0.5-4
<b>CARBAPENEMS</b>		
Imipenem (IPM)	-	1-8
<b>GLYCYLCYCLINE</b>		
Tigecycline (TGC)	-	0.125-1
<b>PHENICOL</b>		
Chloramphenicol (C)	1-16	1-16
<b>OTHER</b>		
Mupirocin (MUP)	0.5-4	0.5-8
Mupirocin High level (MUH)	256	256
Fusidic Acid (FA)	0.5-8	0.5-8
Inducible Macrolide resistance test	Yes	Yes



BD Phoenix™ Emerge panels offer 136 wells for susceptibility testing, allowing for a variety of therapeutic options



# BD Phoenix™ panels

## BD Phoenix™ Combo and AST-only

- Multiple combinations of Gram-negative and Gram-positive panels to fit different needs
- Gram-negative fermenters, nonfermenters and urine panels
- Two formats of Gram-positive panels for Enterococcus and Staphylococcus
- Most products available in combo (ID / AST) and AST-only format
- Embedded detection of resistance markers

Gram Negative AST Panels							
BD reference number	448446	448804	448874	448876	448877	449046	449052
Panel Name	UNMIC-416	UNMIC-409	NMIC-402	UNMIC-403	NMIC-408	NMIC-433	UNMIC-432
Guideline	EUCAST	EUCAST	EUCAST	EUCAST	EUCAST	EUCAST	EUCAST
Antimicrobial (µg/ml) concentration range							
<b>PENICILLIN</b>							
Ampicillin (AM)	2-8	2-8	2-8	2-8	2-8	4-16	4
Piperacillin (PIP)	-	-	4-16	-	4-16	-	-
Mecillinam (MEC)	2-8	-	-	-	-	-	-
Temocillin (TEM)	2-8	4-32	-	-	4-32	-	-
Ticarcillin (TIC)	4-16	-	-	-	-	-	-
<b>β-LACTAM COMBINATION AGENT</b>							
Amoxicillin-Clavulanate (f) (AXC)	2-32	2-32	2-32	2-32	2-32	2-16	2-32
Ampicillin-Sulbactam (f) (SXA)	-	-	-	-	-	1-8	-
Ceftolozane-Tazobactam (CT)	-	-	-	-	-	1-4	-
Piperacillin-Tazobactam (TZP)	4-16	4-16	4-16	4-16	4-16	4-16	4-32
<b>CEPHEMS</b>							
Cefazolin (CZ)	-	-	-	-	-	4-32	4-32
Cefepime (FEP)	0.5-4	1-8	1-8	1-8	1-8	1-8	-
Cefixime (CFM)	0.25-1	-	-	0.5-2	-	-	0.5-4
Cefotaxime (CTX)	1-4	-	1-4	1-4	-	-	-
Cefoxitin (FOX)	4-16	4-16	-	-	4-16	-	-
Ceftazidime (CAZ)	-	1-8	0.5-8	0.5-8	1-8	1-8	2-16
Ceftriaxone (CRO)	-	1-4	-	-	1-4	1-4	1-4
Cefuroxime (CXM)	-	2-8	2-8	2-8	2-8	4-16	-
Cephalexin (CN)	4-16	-	-	4-16	-	-	-
<b>CARBAPENEMS</b>							
Ertapenem (ETP)	0.125-1	0.25-1	0.25-1	0.25-1	0.25-1	0.25-1	0.25-2
Imipenem (IPM)	0.25-8	0.25-8	0.25-8	0.25-8	0.25-8	0.25-8	0.25-8
Meropenem (MEM)	-	0.125-8	0.125-8	0.125-8	0.125-8	0.125-8	0.125-8
<b>LIPOPEPTIDES</b>							
Colistin (CL)	-	-	1-4	-	1-4	1-4	-
<b>AMINOGLYCOSIDES</b>							
Amikacin (AN)	4-16	4-16	4-16	-	4-16	8-32	8-32
Gentamicin (GM)	1-4	1-4	1-4	1-4	1-4	2-8	2-8
Tobramycin (NN)	-	-	1-4	1-4	1-4	-	2-8
<b>TETRACYCLINES</b>							
Tigecycline (TGC)	-	-	0.5-2	0.5-2	0.5-2	0.5-2	1-4
<b>FLUOROQUINOLONES</b>							
Ciprofloxacin (CIP)	0.25-1	0.25-1	0.25-1	0.25-1	0.25-1	0.0625-1	0.25-1
Levofloxacin (LVX)	-	-	0.5-2	-	0.5-2	0.5-2	0.5-4
Norfloxacin (NOR)	0.5-2	0.5-2	-	-	-	-	-
<b>NITROFURAN</b>							
Nitrofurantoin (FM)	16-64	16-64	-	16-64	-	-	32-128
<b>FOSFOMYCINS</b>							
Fosfomycin w/G6P (FF)	16-128	16-64	16-64	16-64	-	-	16-64
<b>FOLATE PATHWAY ANTAGONIST</b>							
Trimethoprim (TMP)	-	1-4	-	1-4	-	-	-
Trimethoprim-Sulfamethoxazole (SXT)	1-4	1-4	1-4	1-4	1-4	2-8	2-8
<b>QUINOLONE</b>							
Nalidixic Acid (NA)	8-32	-	-	-	-	-	-
<b>OTHER</b>							
CPO detect	No	No	No	No	No	No	No
CPO detect Ambler class	No	No	No	No	No	No	No
ESBL	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Gram Positive AST Panels			
BD reference number	448439	448798	449055
Panel Name	PMIC-90	PMIC-88	PMIC-600
Guideline	EUCAST	EUCAST	EUCAST
Antimicrobial (µg/ml)			
<b>PENICILLIN</b>			
Ampicillin (AM)	2-8	2-8	2-16
Penicillin G (P)	0.0625-0.25	0.0625-0.25	0.125-0.5
Oxacillin (OX)	0.25-2	0.25-2	0.25-4
<b>β-LACTAM COMBINATION AGENT</b>			
Amoxicillin-Clavulanate (AMC)	-	-	2-8
<b>CEPHEMS</b>			
Cefoxitin (FOX)	2-8	2-8	2-16
Ceftaroline (CPT)	0.125-1	0.125-1	-
<b>GLYCOPEPTIDES</b>			
Vancomycin (VA)	0.5-4	0.5-8	1-16
Teicoplanin (TEC)	1-4	0.5-8	1-8
<b>LIPOPEPTIDES</b>			
Daptomycin (DAP)	-	0.5-4	1-4
<b>AMINOGLYCOSIDES</b>			
Amikacin (AN)	4-16	-	4-16
Gentamicin (GM)	1-4	1-4	1-4
Gentamicin-Syn (GMS)	500	500	500
Streptomycin-Syn (STS)	-	-	1000
Tobramycin (NN)	1-4	-	-
<b>MACROLIDES</b>			
Erythromycin (E)	0.25-2	0.25-2	0.25-4
<b>TETRACYCLINES</b>			
Tetracycline (TE)	0.5-2	0.5-2	0.5-2
Tigecycline (TGC)	-	0.25-1	-
<b>FLUOROQUINOLONES</b>			
Ciprofloxacin (CIP)	0.25-4	0.5-4	1-4
Levofloxacin (LVX)	-	-	1-8
Moxifloxacin (MXF)	0.25-1	0.25-1	0.25-1
<b>NITROFURAN</b>			
Nitrofurantoin (FM)	16-64	16-64	32-128
<b>LINCOSAMIDES</b>			
Clindamycin (CC)	0.25-1	0.25-1	0.25-1
<b>FOLATE PATHWAY ANTAGONIST</b>			
Trimethoprim (TMP)	1-4	-	-
Trimethoprim-Sulfamethoxazole (SXT)	1-4	1-4	2-8
<b>ANSAMYCINS</b>			
Rifampin (RA)	0.25-1	0.25-1	0.25-1
<b>FOSFOMYCINS</b>			
Fosfomycin w/G6P (FF)	16-64	16-64	8-32
<b>OXAZOLIDINONES</b>			
Linezolid (LZD)	0.5-4	0.5-4	2-8
<b>CARBAPENEMS</b>			
Imipenem (IPM)	-	2-8	-
<b>OTHER</b>			
Fusidic Acid (FA)	1-8	0.5-8	1-8
Mupirocin (MUP)	1-4	-	-
Mupirocin High level (MUH)	256	256	-
Inducible Macrolide resistance test	Yes	Yes	Yes



Select the best formulations to meet your needs. Available in Combo and AST-only



Gram Negative Combo (ID + AST) Panels													
BD reference number	448443	448445	448794	448805	448873	448878	449012	449026	449027	449040	449044	449045	449053
Panel Name	NMIC/ ID-414	UNMIC/ ID-416	NMIC/ ID-402	UNMIC/ ID-409	UNMIC/ ID-403	NMIC/ ID-408	NMIC/ ID-418	NMIC/ ID-503	NMIC/ ID-504	NMIC/ ID-431	NMIC/ ID-435	NMIC/ ID-433	UNMIC/ ID-432
Guideline	EUCAST	EUCAST	EUCAST	EUCAST	EUCAST	EUCAST	EUCAST	EUCAST	CLSI	CLSI	EUCAST	EUCAST	EUCAST
Antimicrobial (µg/ml) concentration range													
<b>PENICILLIN</b>													
Ampicillin (AM)	2-8	2-8	2-8	2-8	2-8	2-8	2-8	2-8	4-16	4-16	4-16	4-16	4-16
Mecillinam (MEC)	-	2-8	-	-	-	-	2-8	-	-	-	-	-	-
Temocillin (TEM)	-	2-8	-	4-32	-	4-32	-	4-32	-	-	-	-	-
Ticarcillin (TIC)	4-16	4-16	-	-	-	-	-	-	-	-	-	-	-
Piperacillin (PIP)	4-16	-	4-16	-	-	4-16	-	-	-	-	-	-	-
<b>β-LACTAM COMBINATION AGENT</b>													
Amoxicillin-Clavulanate (AMC)	-	-	-	-	-	-	-	-	4-16	-	-	-	-
Amoxicillin-Clavulanate (f) (AXC)	2-32	2-32	2-32	2-32	2-32	2-32	2-32	2-32	-	-	2-16	2-16	2-32
Ampicillin-Sulbactam (f) (SXA)	-	-	-	-	-	-	-	-	-	-	1-8	1-8	-
Ampicillin-Sulbactam (SAM)	-	-	-	-	-	-	-	-	4-16	-	-	-	-
Ceftazidime-Avibactam (CZA)	-	-	-	-	-	-	-	0.25-8	0.25-8	-	-	-	-
Ceftolozane-Tazobactam (CT)	-	-	-	-	-	-	-	-	-	1-8	-	1-4	-
Piperacillin-Tazobactam (TZP)	4-16	4-16	4-16	4-16	4-16	4-16	4-16	4-16	4-64	4-64	4-16	4-16	4-32
Ticarcillin-Clavulanate (TIM)	4-16	-	-	-	-	-	-	-	-	-	-	-	-
<b>CEPHEMS</b>													
Cefazolin (CZ)	-	-	-	-	-	-	-	-	2-16	4-16	4-32	4-32	4-32
Cefepime (FEP)	1-4	0.5-4	1-8	1-8	1-8	1-8	-	1-8	1-16	1-16	1-8	1-8	-
Cefixime (CFM)	-	0.25-1	-	-	0.5-2	-	-	-	-	-	-	-	0.5-4
Cefotaxime (CTX)	0.5-4	1-4	1-4	-	1-4	-	0.5-4	-	-	-	-	-	-
Cefoxitin (FOX)	4-16	4-16	-	4-16	-	4-16	-	-	-	-	-	-	-
Ceftazidime (CAZ)	0.5-4	-	0.5-8	1-8	0.5-8	1-8	0.5-8	-	-	-	-	-	-
Ceftazidime (CAZ)	-	-	-	-	-	-	-	1-8	2-16	2-16	1-8	1-8	2-16
Ceftriaxone (CRO)	-	-	-	1-4	-	1-4	-	1-4	1-4	1-32	1-4	1-4	1-4
Cefuroxime (CXM)	-	-	2-8	2-8	2-8	2-8	2-8	2-8	-	4-16	4-16	4-16	-
Cephalexin (CN)	4-16	4-16	-	-	4-16	-	4-16	-	-	-	-	-	-
Cephalothin (CF)	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>MONOBACTAMS</b>													
Aztreonam (ATM)	-	-	-	-	-	-	1-16	-	-	-	-	-	-
<b>CARBAPENEMS</b>													
Ertapenem (ETP)	0.125-1	0.125-1	0.25-1	0.25-1	0.25-1	0.25-1	0.25-1	0.25-1	0.25-1	0.25-1	0.25-1	0.25-1	0.25-2
Imipenem (IPM)	0.25-8	0.25-8	0.25-8	0.25-8	0.25-8	0.25-8	0.25-8	0.25-8	0.25-8	0.25-4	0.25-8	0.25-8	0.25-8
Meropenem (MEM)	0.125-8	-	0.125-8	0.125-8	0.125-8	0.125-8	0.125-8	0.125-8	0.5-16	0.5-4	0.125-8	0.125-8	0.125-8
<b>LIPOPEPTIDES</b>													
Colistin (CL)	-	-	1-4	-	-	1-4	-	1-4	1-4	1-4	0.5-4	1-4	-
<b>AMINOGLYCOSIDES</b>													
Amikacin (AN)	4-16	4-16	4-16	4-16	-	4-16	4-16	4-16	8-32	8-32	8-32	8-32	8-32
Gentamicin (GM)	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	2-8	2-8	2-8	2-8	2-8
Tobramycin (NN)	1-4	-	1-4	-	1-4	1-4	1-4	-	-	-	-	-	2-8
<b>TETRACYCLINES</b>													
Minocycline (MI)	-	-	-	-	-	-	-	-	1-8	-	-	-	-
<b>GLYCILCYCLINE</b>													
Tigecycline (TGC)	0.5-2	-	0.5-2	-	0.5-2	0.5-2	0.5-2	0.5-2	1-4	1-4	0.5-4	0.5-2	1-4
<b>FLUOROQUINOLONES</b>													
Ciprofloxacin (CIP)	0.25-1	0.25-1	0.25-1	0.25-1	0.25-1	0.25-1	0.125-1	0.25-1	0.125-2	0.5-2	0.0625-1	0.0625-1	0.25-1
Levofloxacin (LVX)	-	-	0.5-2	-	-	0.5-2	-	0.5-2	-	1-4	0.5-2	0.5-2	0.5-4
Norfloxacin (NOR)	0.5-2	0.5-2	-	0.5-2	-	-	-	-	-	-	-	-	-
<b>QUINOLONE</b>													
Nalidixic Acid (NA)	-	8-32	-	-	-	-	-	-	-	-	-	-	-
<b>FOLATE PATHWAY ANTAGONIST</b>													
Trimethoprim (TMP)	-	-	-	1-4	1-4	-	1-4	-	-	-	-	-	-
Trimethoprim-Sulfamethoxazole (SXT)	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	2-8	2-8	2-8
<b>NITROFURAN</b>													
Nitrofurantoin (FM)	-	16-64	-	16-64	16-64	-	32-128	-	-	16-64	-	-	32-128
<b>FOSFOMYCINS</b>													
Fosfomycin w/G6P (FF)	-	16-128	16-64	16-64	16-64	-	-	-	-	-	-	-	16-64
<b>OTHER</b>													
CPO detect	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	No	No
CPO detect Ambler class	No	No	No	No	No	No	No	No	No	No	No	No	No
ESBL	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Gram Positive Combo (ID + AST) Panels						
BD reference number	448616	448619	448796	449038	449057	448785
Panel Name	PMIC/ ID-94	PMIC/ ID-90	PMIC/ ID-88	PMIC/ ID-111	PMIC/ID- 600	SMIC/ ID-11
Guideline	EUCAST	EUCAST	EUCAST	CLSI	EUCAST	CLSI/EUCAST
Antimicrobial (µg/ml) concentration range						
<b>PENICILLIN</b>						
Ampicillin (AM)	0.5-8	2-8	2-8	2-8	2-16	-
Amoxicillin (AMX)	-	-	-	-	-	0.25-4
Penicillin G (P)	-	0.0625-0.25	0.0625-0.25	0.125-8	0.125-0.5	0.03125-4
Oxacillin (OX)	-	0.25-2	0.25-2	0.25-2	0.25-4	-
<b>β-LACTAM COMBINATION AGENT</b>						
Amoxicillin-Clavulanate (AMC)	-	-	-	-	2-8	-
Amoxicillin-Clavulanate (f) (AXC)	2-8	-	-	-	-	-
<b>CEPHEMS</b>						
Cefepime (FEP)	-	-	-	-	-	0.5-2
Cefotaxime (CTX)	-	-	-	8-32	-	0.5-2
Cefoxitin (FOX)	-	2-8	2-8	2-8	2-16	-
Ceftaroline (CPT)	-	0.125-1	0.125-1	0.25-2	-	-
Cefuroxime (CXM)	-	-	-	-	-	0.25-2
Moxalactam (MOX)	-	-	-	-	-	-
<b>GLYCOPEPTIDES</b>						
Vancomycin (VA)	0.5-8	0.5-4	0.5-8	1-16	1-16	0.5-4
Teicoplanin (TEC)	0.5-2	1-4	0.5-8	1-16	1-8	1-4
<b>LIPOPEPTIDES</b>						
Daptomycin (DAP)	0.5-4	-	0.5-4	1-4	1-4	0.25-1
<b>AMINOGLYCOSIDES</b>						
Amikacin (AN)	-	4-16	-	-	4-16	-
Gentamicin (GM)	-	1-4	1-4	2-8	1-4	-
Gentamicin-Syn (GMS)	500	500	500	500	500	250-1000
Kanamycin (K)	-	-	-	-	-	-
Kanamycin-Syn (KS)	250	-	-	-	-	-
Tobramycin (NN)	-	1-4	-	-	-	-
Streptomycin-Syn (STS)	1000	-	-	-	1000	-
<b>MACROLIDES</b>						
Erythromycin (E)	0.25-8	0.25-2	0.25-2	0.25-4	0.25-4	0.0625-0.5
<b>TETRACYCLINES</b>						
Tetracycline (TE)	0.5-8	0.5-2	0.5-2	0.5-8	0.5-2	0.5-4
<b>FLUOROQUINOLONES</b>						
Ciprofloxacin (CIP)	0.5-4	0.25-4	0.5-4	0.5-2	1-4	-
Levofloxacin (LVX)	0.25-4	-	-	1-4	1-8	0.5-4
Moxifloxacin (MXF)	-	0.25-1	0.25-1	0.5-2	0.25-1	0.25-2
<b>NITROFURAN</b>						
Nitrofurantoin (FM)	16-64	16-64	16-64	16-64	32-128	-
<b>LINCOSAMIDES</b>						
Clindamycin (CC)	-	0.25-1	0.25-1	0.5	0.25-1	0.03125-0.5
<b>FOLATE PATHWAY ANTAGONIST</b>						
Trimethoprim (TMP)	-	1-4	-	-	-	-
Trimethoprim-Sulfamethoxazole (SXT)	0.5-2	1-4	1-4	1-4	2-8	0.5-2
<b>ANSAMYCINS</b>						
Rifampin (RA)	0.25-4	0.25-1	0.25-1	0.5-2	0.25-1	-
<b>FOSFOMYCINS</b>						
Fosfomycin w/G6P (FF)	16-128	16-64	16-64	-	8-32	-
<b>OXAZOLIDNONES</b>						
Linezolid (LZD)	0.5-8	0.5-4	0.5-4	1-4	2-8	0.5-4
<b>CARBAPENEMS</b>						
Imipenem (IPM)	1-8	-	2-8	-	-	-
Meropenem (MEM)	-	-	-	-	-	0.125-2
<b>GLYCILCYCLINE</b>						
Tigecycline (TGC)	0.0625-0.5	-	0.25-1	0.25-1	-	-
<b>PHENICOL</b>						
Chloramphenicol (C)	1-16	-	-	-	-	2-8
<b>OTHER</b>						
Mupirocin (MUP)	-	1-4	-	-	-	-
Mupirocin High level (MUH)	-	256	256	256	-	-
Fusidic Acid (FA)	-	1-8	0.5-8	-	1-8	-
Inducible Macrolide resistance test	Yes	Yes	Yes	Yes	Yes	No

# Consumables

## Consumables for Manual Panel Preparation

Reagents	ID ONLY	AST	AST (Emerge)	COMBO	Strep
BD Phoenix™ ID Broth 4.5mL [246001] or 2.2mL [246005]	✓	✓	✓	✓	✓
BD Phoenix™ AST Broth 8mL [246003]		✓		✓	
BD Phoenix™ AST Indicator [246004]		✓		✓	
BD Phoenix™ AST broth 12.5ml - Emerge [246016]			✓		
BD Phoenix™ AST Indicator- Emerge [246015]			✓		
BD Phoenix™ AST-S Broth 8mL [246007]					✓
BD Phoenix™ AST-S Indicator [246009]					✓
BD Phoenix™ Pipette Tips [448037]		✓	✓	✓	✓

## Consumables for Phoenix™ AP Panel Preparation

Reagents	ID ONLY	AST	COMBO	Strep
BD Phoenix™ ID Broth 4.5mL [246001] or 2.2mL [246005]	✓	✓	✓	✓
BD Phoenix™ AST Broth 8mL [246003]		✓	✓	✓
BD Phoenix™ AST broth-Emerge 4.5mL [246011]			✓	
BD Phoenix™ AP AST Indicator [246006]		✓	✓	✓
BD Phoenix™ AP Pipette Tips [448038]	✓	✓	✓	✓
BD Phoenix™ AP ID Solution [448012]	✓	✓	✓	✓
BD Phoenix™ AP Tubing [448015]	✓	✓	✓	✓
BD Phoenix™ AP Solid waste bin [448013]	✓	✓	✓	✓
BD Phoenix™ AP Waste Liquid Bottle [448014]	✓	✓	✓	✓



BD Phoenix system is CE marked in compliance to the European IVD Directive 98/79/EC

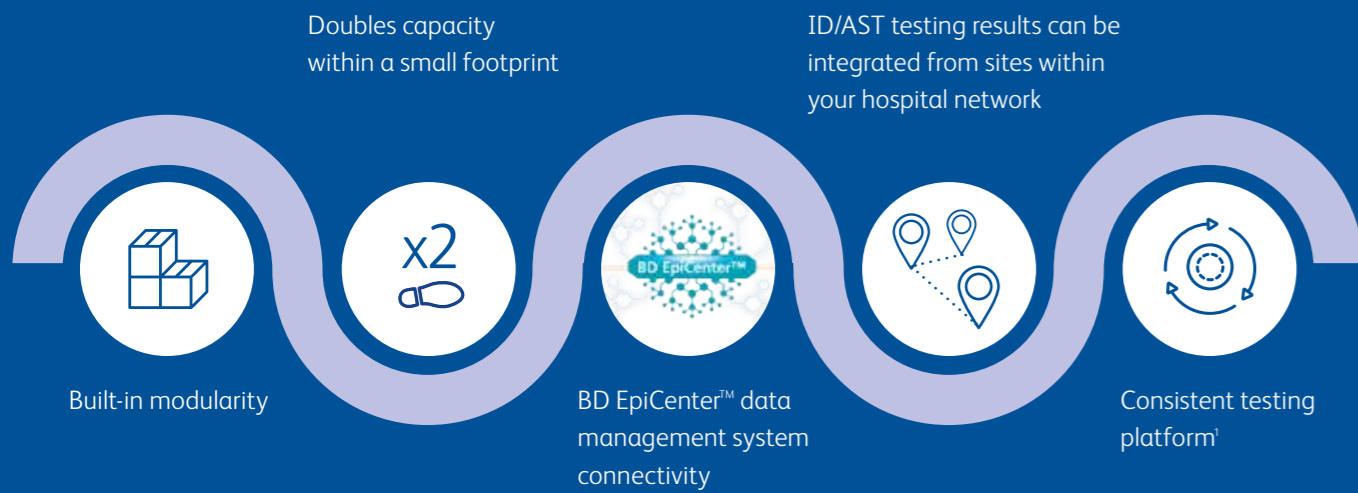
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The BD Phoenix™ M50 system delivers the performance<sup>1</sup>, connectivity and functionality required by clinical laboratories today, in a compact and modular format.



## BD Phoenix™ M50 Instrument

Experience built-in modularity with the BD Phoenix™ M50 ID/AST system. Whether your ID/AST testing volume is increasing or highly variable, the BD Phoenix™ M50 Instrument adapts easily by doubling capacity within a small footprint. It's as simple as stack, plug and work.

The BD Phoenix™ M50 has been designed with a touch screen interface available in several languages and embedded with the BDxpert system. Up to two units can be stacked to best fit different testing needs while minimal maintenance is required (no reagents, pumps or waste to maintain).



## BD Phoenix™ M50 Instrument

Demonstrated performance<sup>1</sup>, connectivity and functionality, in a compact and modular format for optimal flexibility and performance in an identification and susceptibility test system.

### Instrument specifications

Physical Dimensions and Power Requirements	BD Bruker MALDI Sirius™	Single BD Phoenix™ M50 Instrument with PC	BD Phoenix™ AP System
Height	107 cm	53.5 cm	61 cm
Width	50 cm	136 cm	84 cm
Depth	71 cm	76.5 cm	81.5 cm
Clearance (left)	50 cm	7.62 cm	7.6 cm
Clearance (front)	50 cm	45.72 cm	40.7 cm
Weight	75 kg	54.5 kg	90.7 kg
Power Requirements	220-230VAC ± 10%, 50 Hz 10 amp Circuit	90-264 VAC; 47-63Hz 15 amp circuit	100-240 VAC; 50-60Hz 6.3 amp circuit



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## BD Phoenix™ Automated Microbiology

Accurately<sup>1</sup> detect antimicrobial resistance with confidence





## Compact integration of ID/AST systems

The BD Phoenix™ M50 Instrument with the BD Bruker MALDI Biotyper™ Instrument

Identification
Accuracy
Efficiency
Reporting



State of the art Mass Spectrometry identification coupled with accurate resistance<sup>1</sup> detection not only supports your goal to maximise laboratory efficiency, but also gives you the confidence you need to accelerate ID result reporting.<sup>2</sup>

The BD EpiCenter™ Data Management System offers an easy and intuitive plate mapping solution. It also enables smooth integration of Bruker-generated IDs with BD Phoenix™ M50 instrument-generated MICs for a complete susceptibility profile.



## Emerging resistance detection

For timely therapeutic intervention and infection control:

Confirm known resistance
Detect emerging resistance
Detect and classify CPOs
Re-configuring unnecessary

The BD Phoenix™ System has demonstrated performance<sup>1</sup> in detecting emerging resistance. This allows for timely and appropriate patient therapeutic intervention.

The BD Phoenix™ M50 system panels test for several resistance markers,<sup>2</sup> such as:

- |   |  |
|---|--|
| HLAR - High Level Aminoglycoside Resistant Enterococcus               | BL-Staph β-Lactamase (Nitrocefim based test)       |
| iMLSb - Inducible Clindamycin Resistance                              | VRSA - Vancomycin- Resistant Staphylococcus aureus |
| MRSA - based on Oxacillin Interpretation with Staphylococcus aureus   | VRE - based on Vancomycin interpretation           |
| mecA - detection of mecA-mediated resistance in Staphylococcus aureus | CPO - Carbapenemase-producing organism             |
|   | ESBL - Offered on Gram-negative panels             |



<sup>1</sup> Depending on BD Phoenix™ panel type and organism identification.



Health care institutions need to be able to accurately detect and prevent the spread of Carbapenemase-producing organisms (CPOs), preventing further resistance, thus preserving current antibiotic options. BD Phoenix™ CPO Detect Test provides fast, accurate, and efficient detection and confirmation of CPOs to support infection control.<sup>3</sup>

## Workflow

### Ease of use

BD Phoenix™ workflow is based on advanced panel and instrument designs that ensure:

- |   |   |
|---|---|
| All panels and broths are stored at room temperature                                      | No off-line tests, ensuring optimised workflow                            |
| Flexible inoculum density (0.25 or 0.5 McFarland) that reduces subculture incubation time | Panels are sealed after inoculation, ensuring safe handling               |
| No reagent addition to panel, allowing an effortless workflow and simplified logistics    | ID-only, combo or AST-only panels available to suit your laboratory needs |

## BD Phoenix™ AP workflow efficiency

The BD Phoenix™ M50 Instrument with the BD Phoenix™ AP Instrument

Reduce panel preparation time
Incorporate automated nephelometry
Standardise inoculum preparation

BD Phoenix™ AP complements BD Phoenix™ M50 by reducing panel preparation time<sup>4</sup>, standardising inoculum preparation and incorporating automated nephelometry.

The BD Phoenix™ AP automated inoculation preparation instrument may help to reduce sample preparation workflow burdens, reducing total hands-on time per sample by 50% compared to manual BD Phoenix™ preparation and by an average of 20% compared to selected competitive products.<sup>4</sup>

The BD Phoenix™ AP instrument is capable of processing a starting McFarland of 0.20 to 4.0 to the appropriate testing McFarland, and can increase the consistency of the isolate preparation.



## BD EpiCenter™ Data Management System

An integral component of the BD Phoenix™ M50, generate real-time data that may help impact patient care:

Timely monitoring, analysis and communication
Reduction of labour-intensive tasks
Rapid communication of Maldi ID results

The BD EpiCenter™ data management system offers the BDxpert system, which implements CLSI or EUCAST breakpoints and SIR interpretations. BD EpiCARE™ is an optional extension of the BD EpiCenter™ system that gives users the ability to define customised rules and actions to ensure compliance for the reporting of microbiology data that may be specific to their organisation.

