



**3<sup>rd</sup> Presentation Block:  
Preparative and Flash Systems**

# Preparative and Flash Systems

- High effective modular LC preparative system containing UV-VIS photodiode array detector, preparative pump and gradient box.
- The system is variable and allows different configurations of components.
- All our units have implemented support for ECOMAC and Clarity software.



*ECS23PC Quaternary Preparative Gradient System  
with Fraction Collector*



# Solvent Delivery

# Preparative Pumps

We are able to make all devices in OEM and standalone variants.

## 1) ECP2050, ECP2200, ECP2300 Pumps

- Pumps are designed with two pump heads connected in parallel with a piston diameter of 3/8”.
- New sophisticated unit allows achieving a precise **low-pressure gradient**, i.e. gradual changes of solvent composition by mixing **up to four liquids** at the pump's entry.
- It is also possible to predefine percentage of composition when using the pump in isocratic mode. The gradient profile can be defined from computer or manually using display and keypad.





# Preparative Pumps

- All pumps are delivered with GFP (PTFE) seals a default, recommended optimal seals are UHMW-PE seals, ask for more information.
- These pumps are equipped with the **Pressure Compensation Learning algorithm**. Thanks to this smart adaptive process, **the pump regulates the rotation speed of the camshaft** and measure its impact on pressure pulsation **to minimize the output pulsation** as much as possible. The algorithm, due to its **adaptive capacity**, is applicable for many combinations of pump working conditions(solvents, columns, etc.).
- Preparative isocratic pump works together with Gradient Boxes also as gradient pump.

# Preparative Pumps

## 2) 1000 ml/min Pumps

- Preparative pump with very high pressure up to **15 MPa** at flow rate of **500 ml/min** and **10 MPa** at flow rate of **1000 ml/min**. It has two pistons connected in parallel, with diameter of 20 mm. It is suited for preparative liquid chromatography where the high pressure is needed, etc.
- There is a possibility to use this pump in a **high-pressure gradient mode**, where two, three or four units are controlled via PC using RS232.
- Pump is supported with software **ECOMAC** and **Clarity** .



# Preparative Pumps

## 3) IOTA 50 and IOTA 300 Pumps

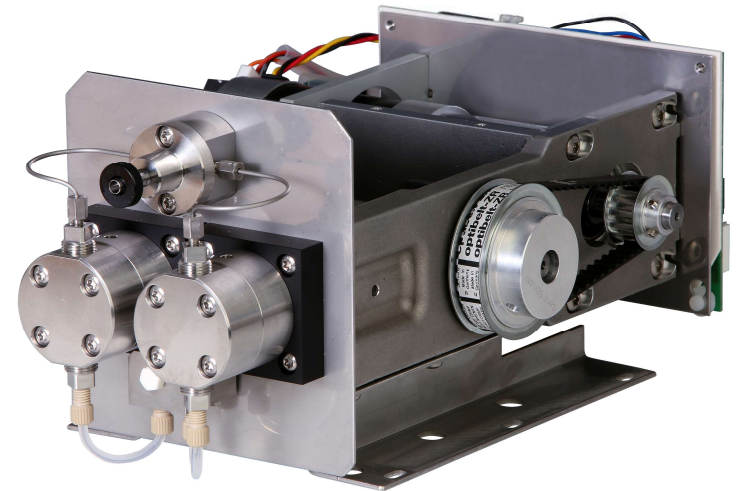
- IOTA 50 has flow-rate range from 0.1 to 50 ml/min, IOTA 300 from 1 to 300 ml/min. Maximum operating pressure for IOTA 50 is 30 MPa (4351 PSI), for IOTA 300 7,5 MPa (1015 PSI).
- It has two pistons connected in parallel, with diameter of 3/8". Beneficiary is also a very stable run even at low flow rates.
- There is a possibility to use this pump even at high pressure gradient mode, where are two, three or four units controlled from PC using RS232.
- Pump is supported with software ECOMAC and Clarity.
- IOTA Pump is equipped with pressure sensor.



# Preparative Pumps

## 4) THETA 50 and THETA 300 Pumps

- THETA 50 has flow-rate range from 0.1 to 50 ml/min, THETA 300 from 1 to 300 ml/min. Maximum operating pressure for THETA 50 is 30 MPa (4351 PSI), for THETA 300 7,5 MPa (1015 PSI).
- Beneficiary is also a very stable run even at low flow rates. This pump is designed as OEM/built-in unit.
- There is a possibility to use this pump even at high pressure gradient mode, where are two, three or four units controlled from PC using RS232.
- Pump is supported with software ECOMAC and Clarity.
- THETA Pump isn't equipped with pressure sensor.

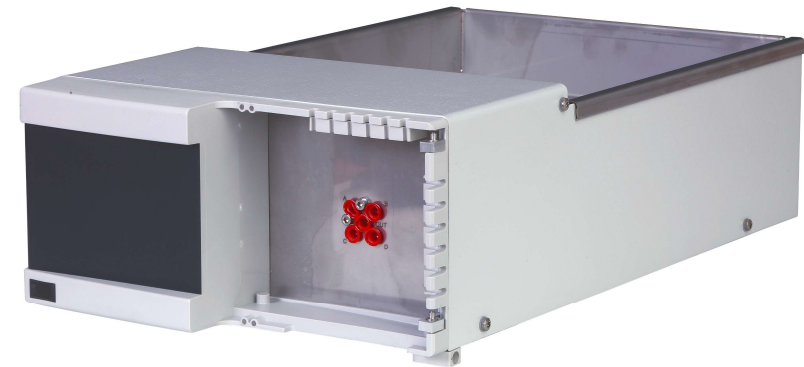




# Boxes

## 5) ECB2005, ECB2005PC

- **Box** is suited for handling liquids in ECOM gradient systems. It accommodates a container for solvent bottles and **four-way gradient valve**.
- **Four-way gradient valve** is controlled from the pump **ECP2200, ECP2300** and gradient box ECB2005 must be ordered with pump.
- To do HPLC system smaller as possible, in ECB2005PC Box is assembled an industrial PC board. This solution allows installation OS (Windows or Linux) and chromatography SW ECOMAC or Clarity.



# Boxes

## 6) ECB2007, ECB2007PC

- **Box** is suited for handling liquids in ECOM gradient systems. It accommodates a container for solvent bottles and **four-way gradient valve**.
- **Four-way gradient valve** is controlled from the pump **ECP2050** and gradient box ECB2007 must be ordered with pump.
- To do HPLC system smaller as possible, in ECB2007PC Box is assembled an industrial PC board. This solution allows installation OS (Windows or Linux) and chromatography SW ECOMAC or Clarity.





# Sample Injection

# Sample Loops

- ECOM manufactures and supplies sample loops of various volumes (from 2 ml - 100 ml).
- The injection of the sample is done manually, but it is possible to equip the systems with a motor operated valves controlled via PC.
- Sample injection can also be performed via gradient boxes, but gradient valves are very sensitive to impurities.
- It is also possible to use another pump with a switching valve for injecting the sample directly to the column.



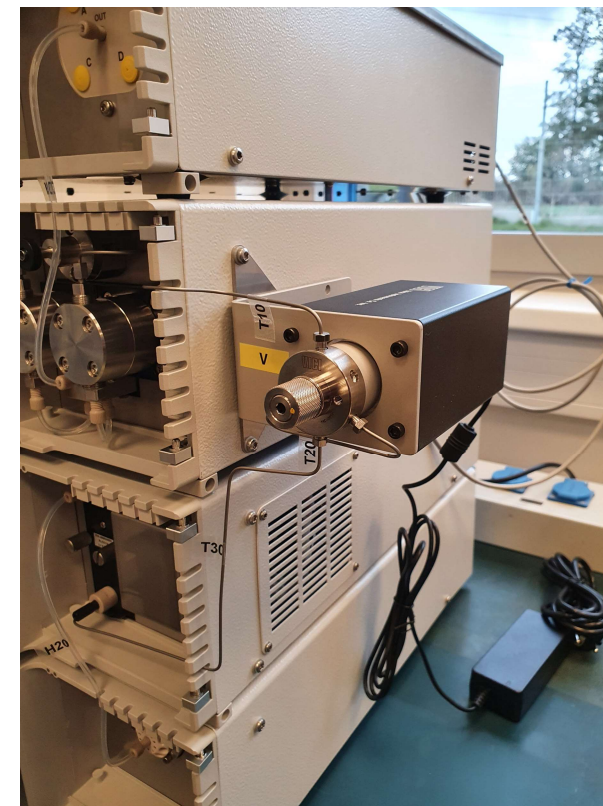
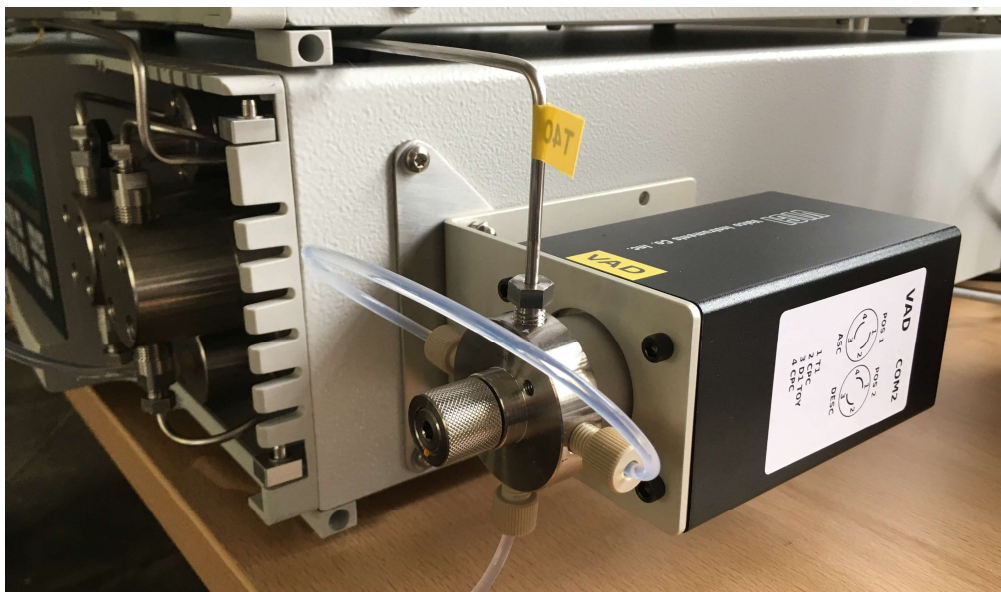
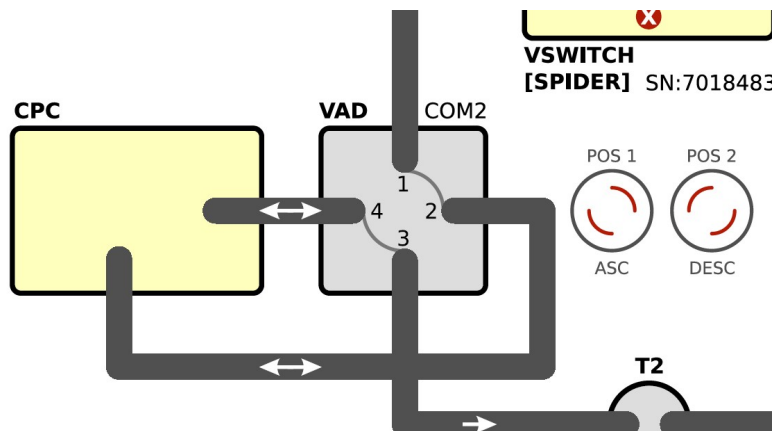


# Valves

# Valves



- We offer a different valve types - injection valves, switching valves, motor operated valves, column selectors, etc.
- It is possible to control valves through a PC (e.g. use only odd positions, pause during valve changing position, etc.)
- It is also possible to use position valves as a fraction collectors.



# Preparative Injection Valve

- Stainless steel two-position valve with needle injection port on the front side.
- **No-Flow-Interruption** technology reduces pressure spikes during position switching to a minimum. It has a built-in position sensor for starting data acquisition precisely at the point of injection.
- The stator of the valve is made of stainless steel and features the DiaDur coating on its working face which not only protects the contact surface from wear but also improves the abrasion of the stator and rotor.
- The needle port can be used either with syringe needle delivered with the valve or any other blunt needle (with PST3 needle point style) with an outer diameter of 1.6mm.
- The valve is standardly delivered with PEEK rotor seal.







# Detection

# Detection

## Preparative and Flash Detectors

- All our devices can be manufactured in OEM (built-in) or standalone versions at the customer's request.
- OEM built-in UV (UV-VIS) DAD detectors suited for preparative and flash chromatography with deuterium lamp (and for versions 190 (200) - 800 nm also a halogen lamp) as a light source .
- These detectors are mostly offered in **three versions**:
  - **Two Channel** version measures at **two wavelengths simultaneously** with possibility to see **current scan**.
  - **Four Channel** version measures at **four wavelengths simultaneously** with possibility to see **current scan**.
  - **Scanning version** measures at **four wavelengths simultaneously** or **sends scan with speed 20 Hz which allows to create 3D picture**.
- Standalone detectors are mostly controlled manually by **keyboard and display**, but also via **RS232, USB or LAN**.
- The detectors are supplied with the appropriate cell type (the cell type can be found in the info sheet of the particular detector).



# Detection

## EX Detectors

- UV (UV-VIS) DAD detectors with **SMA 905 connectors** allowing to use external cell connected with optical cables suited for preparative and flash chromatography.
- The wavelength ranges of the detectors are **190(200) - 400/600/800 nm**.
- These detectors are offered in **three versions**:
  - **Two Channel** version measures at **two wavelengths simultaneously** with possibility to see **current scan**.
  - **Four Channel** version measures at **four wavelengths simultaneously** with possibility to see **current scan**.
  - **Scanning version** measures at **four wavelengths simultaneously or sends scan with speed 20 Hz which allows to create 3D picture**.
- The optical cables for EX detectors are specially selected for their quality and excellent parameters.



# Detection

## FIX Detectors

- OEM built-in UV (UV-VIS) detectors suited for preparative and flash chromatography.
- These detectors are offered in **two versions**:
  - **Single UV detector** version measure at **one fix wavelength** which is adjusted in production **according to customer order in range of 200 – 600 nm.**
  - **Dual UV detector** version measure at **two fix wavelengths** which are adjusted in production **according to customer order in range of 200 – 600 nm.**
- We are able to produce all our detectors as a FIX version.



# Detection

## LED Detectors

- OEM built-in UV detectors suited for preparative and flash chromatography with UV **LED diodes as light source**.
- Standardly are used diodes with wavelength **265 and 280 nm**.
- These detectors are offered in **two versions: Single or Dual LED Detector**.
- **Most important features of LED20G detectors:**
  - narrowed down spectral halfwidth compared with classical LED detectors
  - exact wavelength compared with classical LED detectors
  - small dimensions
  - low cell heating thanks LED diodes low power supply
  - easy flow cell replacement
  - sophisticated diagnostic software









# Preparative Cells




- In the following slides there is an overview of the preparative cells ECOM produces.
- **All of our cells can also be made in the OEM version or directly adjusted to the customer's requirements.**






# PREPARATIVE CELLS

	Part Number	Cell	Max. working pressure	Pressure (testing)	Tightening torque	Accessories
	<b>2520000X</b>	Preparative Cell PLCC06 (l=1.3, 1/16", UNF10-32)	2MPa	4MPa	5-6cNm	
	<b>2500000X</b>	Preparative Cell PLCC07 (l=0.3, 1/16", UNF10-32)	2MPa	4MPa	5-6cNm	
	<b>8700000X</b>	Preparative Cell PLCC08 (l=0.1, 1/16", UNF 10-32)	2MPa	4MPa	5-6cNm	
	<b>3200000X</b>	Preparative Cell PLCC14 (l=0.1 1/8" 1/4"-28)	2MPa	4MPa	5-6cNm	
	<b>3210000X</b>	Preparative Cell PLCC15 (l=0.3, 1/8", 1/4"-28)	2MPa	4MPa	5-6cNm	
	<b>3220000X</b>	Preparative Cell PLCC17 (l=1.3mm, 1/8", 1/4"-28)	2MPa	4MPa	5-6cNm	



# PREPARATIVE CELLS

	Part Number	Cell	Max. working pressure	Pressure (testing)	Tightening torque	Accessories
	<b>321G000X</b>	Preparative Cell PLCC18 GRACE (response 500-700mV)	2MPa	4MPa	5-6cNm	
	<b>321D000X</b>	Preparative Cell PLCC19 (l=2.4, 1/8", 1/4"-28)	2MPa	4MPa	5-6cNm	
	<b>3L20003X</b>	Preparative Cell PLCC3L B (l=0.3, 3/16", 5/16"-24) 100°	2MPa	4MPa	5-6cNm	









	Part Number	Cell	Max. working pressure	Pressure (testing)	Tightening torque	Accessories
	<b>321S000X</b>	Preparative Cell PLCC19 PEEK (l=2.4, 1/8", 1/4"-28)	2MPa	4MPa	5-6cNm	
	<b>321P000X</b>	Preparative Cell PLCC15 PEEK (l=0.3 1/8" 1/4"-28)	2MPa	4MPa	5-6cNm	
	<b>25P0000X</b>	Preparative Cell PLCC07 PEEK (l=0.3, 1/16", UNF10-32)	2MPa	4MPa	5-6cNm	







# HIGH PRESSURE PREPARATIVE PEEK CELLS

	Part Number	Cell	Max. working pressure	Pressure (testing)	Tightening torque	Accessories
	<b>3HP0800X</b>	High pressure Cell PLCC HP08 PEEK (l=1 mm; 1/8"; 5/16"-24)	30MPa	35MPa		
	<b>3HP1600X</b>	High pressure PLCC HP16 PEEK (l=1 mm, 1/16", UNF 10-32)	30MPa	35MPa		



# PREPARATIVE CELLS IN BRACKET

	Part Number	Cell	Max. working pressure	Pressure (testing)	Tightening torque	Accessories
	<b>252L000X</b>	Preparative cell in bracket PLCC06L (l=1.3, 1/16", UNF10-32)	2MPa	4MPa		
	<b>25L0000X</b>	Preparative cell in bracket PLCC07L (l=0.3 1/16" UNF10-32)	2MPa	4MPa		
	<b>ANA9400X</b>	Preparative cell in bracket PLCC15L (l=0.3, 1/8", 1/4" - 28)	2MPa	4MPa		
	<b>ANA9300X</b>	Preparative cell in bracket PLCC17L (l=1.3, 1/8", 1/4" - 28)	2MPa	4MPa		
	<b>ANA8100X</b>	Preparative cell in bracket PLCC19L (l=2.4, 1/8", 1/4" - 28)	2MPa	4MPa		
	<b>ANA9203X</b>	Preparative cell in bracket PLCC3L L (l=0.3, 3/16", 5/16"-24)	2MPa	4MPa		
	<b>87L0000X</b>	Preparative cell in bracket PLCC08L (l=0.1, 1/16", UNF 10-32)	2MPa	4MPa		
	<b>ANA9800X</b>	Preparative cell in bracket PLCC14L (l=0.1 1/8" 1/4"-28)	2MPa	4MPa		







## PREPARATIVE PEEK CELLS IN BRACKET

	Part Number	Cell	Max. working pressure	Pressure (testing)	Tightening torque	Accessories
	<b>ANA94L0X</b>	Preparative Cell in Bracket PLCC15L PEEK (l=0.3, 1/8", 1/4" - 28)	2MPa	4MPa		
	<b>25LP000X</b>	Preparative Cell in Bracket PLCC07L PEEK (l=0.3 1/16" UNF10-32)	2MPa	4MPa		
	<b>ANA93L0X</b>	Preparative Cell in Bracket PLCC17L PEEK (l=1.3 1/8", 1/4" - 28)	2MPa	4MPa		
	<b>ANAL000X</b>	Preparative Cell in Bracket PLCC19L PEEK (l=2.4, 1/8", 1/4"-28)	2MPa	4MPa		


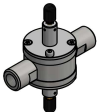
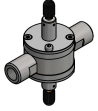
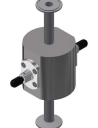


## HIGH PRESSURE PREPARATIVE CELLS IN BRACKET

	Part Number	Cell	Max. working pressure	Pressure (testing)	Tightening torque	Accessories
	<b>ANAHP08X</b>	High pressure Preparative Cell PLCC HP08L PEEK in Bracket (1 mm, 5/16"-24)	30MPa	35MPa		
	<b>ANAHP16X</b>	High pressure Preparative Cell PLCC HP16L PEEK in Bracket (l=1 mm, UNF 10-32)	30MPa	35MPa		


# PREPARATIVE EX CELLS

	Part Number	Cell	Max. working pressure	Pressure (testing)	Tightening torque	Accessories
	<b>KC00000X</b>	Preparative Cell PLCC20 Plus	5MPa	8MPa		
	<b>KC00000X</b>	Preparative Cell PLCC23 7/16"	5Mpa	8Mpa		
	<b>KC00000X</b>	Preparative Cell PLCC23 7/16" C276	5Mpa	8Mpa		
	<b>KC00000X</b>	Preparative Cell PLCC20 Plus, Tri-clamp 3/8"	5MPa	8MPa		
	<b>321EX00X</b>	Preparative Cell PLCC15 EX (l=0.3, 1/8", 1/4"-28)	2MPa	4MPa	5-6cNm	
	<b>322EX00X</b>	Preparative Cell PLCC17 EX (l=1.2, 1/8", 1/4"-28)	2MPa	4MPa	5-6cNm	

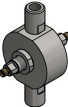

# PREPARATIVE EX CELLS

	Part Number	Cell	Max. working pressure	Pressure (testing)	Tightening torque	Accessories
	<b>3LEX003X</b>	Preparative Cell PLCC3L EX (l=0.3, 3/16", 5/16"-24)	2MPa	4MPa	5-6cNm	
	<b>3LEXA03X</b>	Preparative Cell PLCC3L EX (l=0.3, 1/4", 7/16"-20) with reduction from 5/16"-24	2MPa	4MPa	5-6cNm	
	<b>3LEXACUX</b>	Preparative Cell PLCC3L EX (l=customizable, 1/4", 7/16"-20) with reduction from 5/16"-24	2MPa	4MPa	5-6cNm	
	<b>TKC1000X</b>	Preparative EX Cell Tri-clamp DN10 3/8" (l=2mm)	2MPa	4MPa		
	<b>TKC1500X</b>	Preparative EX Cell Tri-clamp DN15 1/2" (l=2mm)	2MPa	4MPa		
	<b>TKC1900X</b>	Preparative EX Cell Tri-clamp DN20 3/4" (l=0.1mm)	2MPa	4MPa		





## PREPARATIVE EX PEEK CELL

	Part Number	Cell	Max. working pressure	Pressure (testing)	Tightening torque	Accessories
	<b>321SEX0X</b>	Preparative Cell PLCC19 EX PEEK (l=2.4, 1/8", 1/4"-28)	2MPa	4MPa	5-6cNm	

## HIGH PRESSURE PREPARATIVE EX CELLS

	Part Number	Cell	Max. working pressure	Pressure (testing)	Tightening torque	Accessories
	<b>KCHP000X</b>	High Pressure Preparative Cell PLCC20 Plus, Armen 7/16"	5MPa	8MPa		
	<b>KCHP000X</b>	High Pressure Preparative Cell PLCC23 7/16" C276	30MPa	35MPa		

# PREPARATIVE EX TURBO CELLS

	Part Number	Cell	Max. working pressure	Pressure (testing)	Tightening torque	Accessories
	<b>21DN350X</b>	Preparative Cell Turbo tri-clamp 1 1/2" L=10 mm	2Mpa	4Mpa		
	<b>21DN250X</b>	Preparative Cell PLCC Turbo l=0.1 -3.8 mm	2MPa	4MPa		
	<b>21DN230X</b>	Preparative Cell PLCC Turbo l=1mm	2MPa	4MPa		
	<b>21DN090X</b>	Preparative Cell PLCC Turbo 1/2", l=0.15 – 3.5mm	2MPa	4MPa		



# Fraction Collectors



# Fraction Collectors

## 1) ECF2096 Fraction Collector

**ECF2096** for **automation of flash and preparative purification**. It collects fractions according chosen method which can be created manually using keyboard, just as using **ECOMAC** software. Analog input allows fractioning directly by signal from detector.

Two racks are easily removable and available for three tubes type 8, 21 and 40 ml tubes. Collect/waste valve is assembled.



# Fraction Collectors

## 1) ECV2010 Fraction Collector

**ECV2010** for **automation of flash and preparative purification**. It collects fractions according chosen method which can be created using **ECOMAC** software.

Fraction collector is equipped with selector rotary valve with 10 positions. Single stream is directed to selected outlet. It is gradually collected liquid outflowing from detector of the liquid chromatography system. Valve switches between 10 outlets. One of them is used as waste and others are used for collecting fractions.





Thank you for your attention!

If you have any questions, please do not hesitate to ask us or  
contact us!