mHPU (Mobile Hydraulic Power Unit)

SMALL !

EFFICIENT !

MODULARIZED !

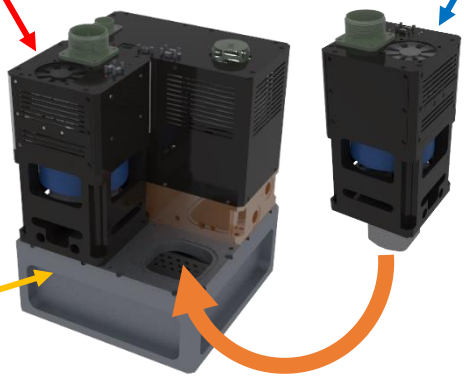
mHPU(mobile Hydraulic Power Unit), operated by a battery unit, is a small and portable but strong power unit for hydraulic robots.

mHPU consists of a hydraulic controller, a manifold, and pump modules. The number of pump modules depends on the required maximum flow rate.

mHPU supports communication methods such as high-speed CAN and Ethernet(UDP), allowing the user to control and check the state of mHPU.

Hydraulic module
- Manifold
- Prop. Relief valve
- Relief valve(Direct)
- Accumulator
- Pressure Sensor
- Temp. sensor
- Controller

Tank
- Operation oil
- Angled de-aeration screen



Pump module
- Pump
- Motor
- Motor-driver
- Encoder
- Temp. sensor(x2)
- Controller
- Fan

FEATURES

- **Stable pressure control system**
- **High efficiency system**
- **High performance CPU included for reliable system control**
- **Anti-shock pressure control valve**
- **Operating pressure of 14MPa**
- **Maximum flow rate of 5.5LPM per pump module**

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mHPU (Mobile Hydraulic Power Unit)

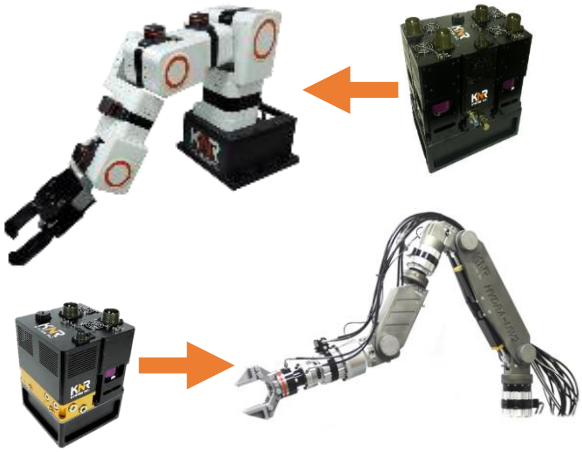
Your Benefit

High Efficiency

KNR's mHPU is the controllable and programmable hydraulic power unit that can control flow rate and pressure according to the requirements of applied system. This optimal control results in high efficiency to save energy for driving Power Units.

Flexibility

mHPU consists of a hydraulic module and several pump modules. The maximum flow rate of the HPU system depends on the number of pump modules.



Compact Design

Using Compact Design technology, KNR offers mHPU small in size while high in performance, supplying enough flow rate to be applied in the robotics field.

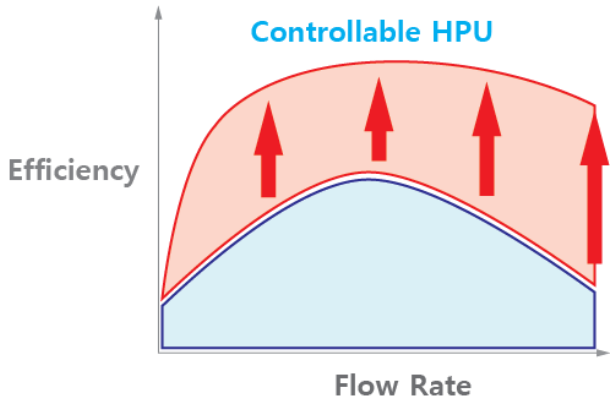
Convenience

mHPU offers multiple communication interfaces, giving users a freedom in application.

mHPU (Mobile Hydraulic Power Unit)

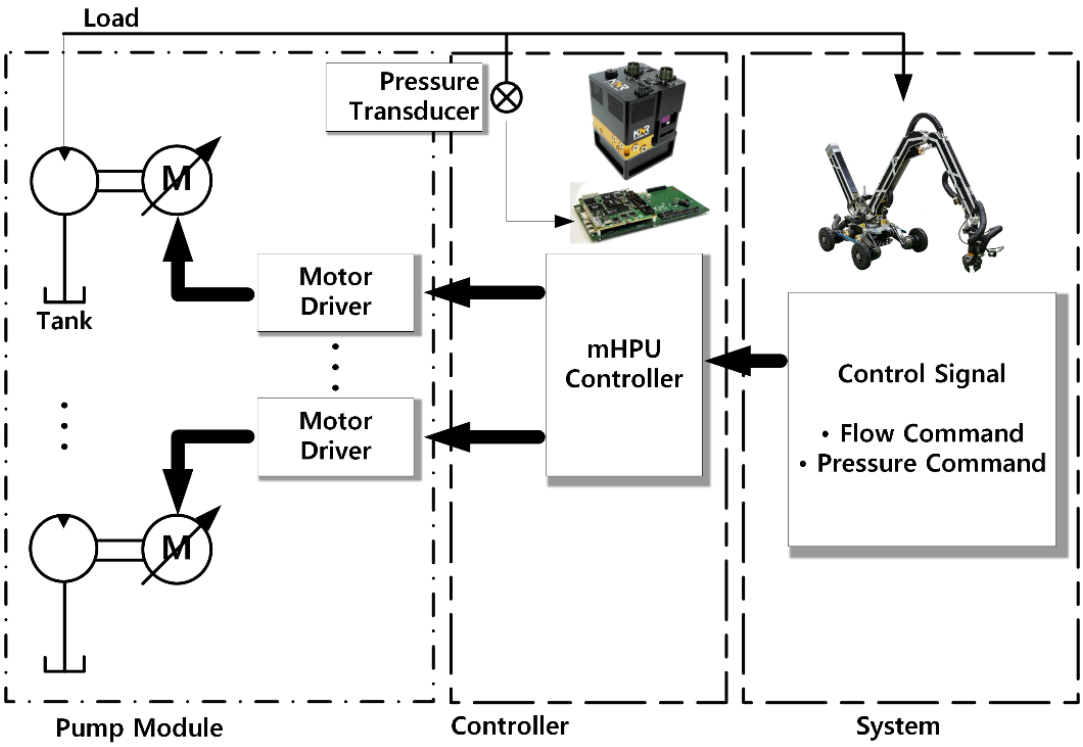
High Efficiency

As the adaption of hydraulics in field robots increases, small and lightweight power units are becoming an essential technology. The general problem with HPUs is that they constantly supply more flow rate than necessary, causing a loss in energy efficiency.
The lost energy produces heat, requiring larger cooling systems to maintain proper temperature.



Larger cooling system also causes the robot to be heavier, requiring larger battery capacity. In order to handle these problems, KNR developed mobile hydraulic power units (LHPU and mHPU) that supplies optimum flow rate for the system. mHPU can control the flow rate in a continuous range, and by setting the output flow rate just enough to cover the operating flow rate, the energy loss is minimized and the efficiency is maximized.

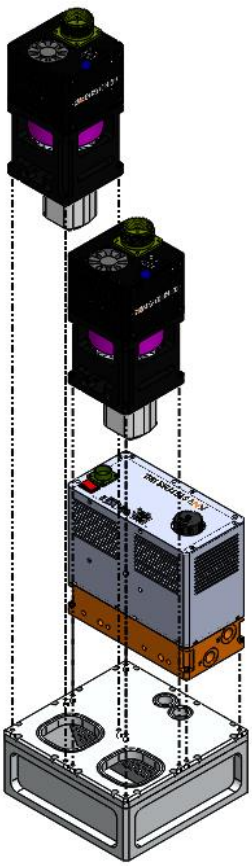
Adjustable flow rate to match the system specification



Flexibility

mHPU consists of a hydraulic controller and a manifold, and pump modules. The number of pump modules depends on the required flow rate. mHPU supports user communication, such as high-speed CAN and Ethernet(UDP), allowing them to control and check the state of mHPU.

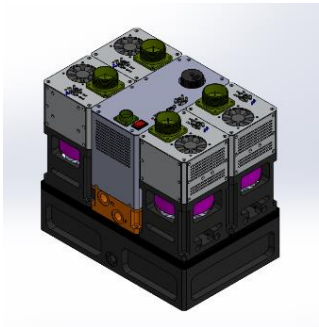
The number of pump modules attached to the mHPU can be modified, each pump module having its own internal controller, providing optimum control of output, and using CAN 2.0A for communication.
mHPU shows best performance when the control algorithm adapts to the module configuration.



1 Module (5.5LPM)

2 Module (11LPM)

3 Module (16.5LPM)



4 Module (22LPM)

mHPU (Mobile Hydraulic Power Unit)

APPLICATIONS

▪ Manipulator

HYDRA-UW
(KNR's Underwater Manipulator)

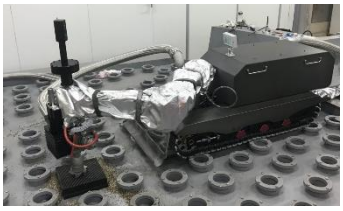
HYDRA-MP3
(KNR's Multi-Purpose Manipulator)

▪ Field Robot

GIBBON
(KNR's Hydraulic Mobile Robot in a nuclear power plant)

DCR

NCR



(KNR's Hydraulic Mobile Robot in high dust & high temperature environment)

mHPU (Mobile Hydraulic Power Unit)

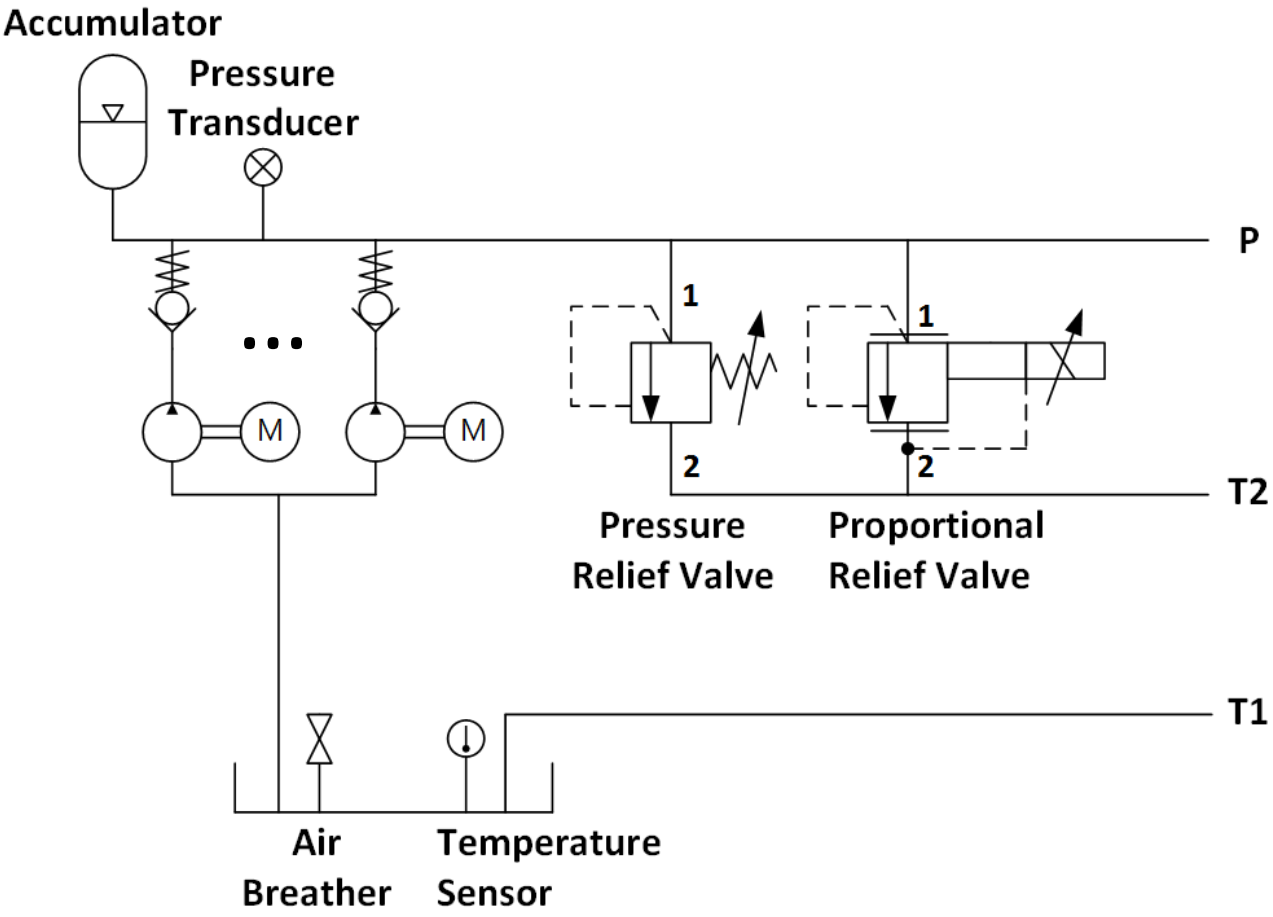
SPECIFICATION

Hydraulic Module	
Voltage	34VDC ~ 48VDC
Current Consumption	2A(max)
Connector	MS-3102-12S-3-P (MIL-5015 type)
Recommended Cable	20AWG (min)
Pressure	140bar (max)
Flow rate	5.5LPM x Number of pump modules
User Interface (CAN) Connector	CAN 2.0A, 1Mbps Micro D - sub 9pin
User Interface (UDP)	RJ - 45
Option (External installation)	- Bootstrap - Inline Filter - Cooling Fan

Pump Module	
Operating Temperature	- Air temperature : 20℃~40℃ - System : 20℃~80℃
Voltage	Rated Voltage : 34VDC ~ 48VDC
Current Consumption	120A(max)
Connector	3102A-24-9-P(MIL-5015 type)
Recommended Cable	6AWG (min)
Flow rate	5.5LPM(max)
External Interface (CAN)	- Connector : Micro D-sub 9pin - CAN 2.0A - 1Mbps

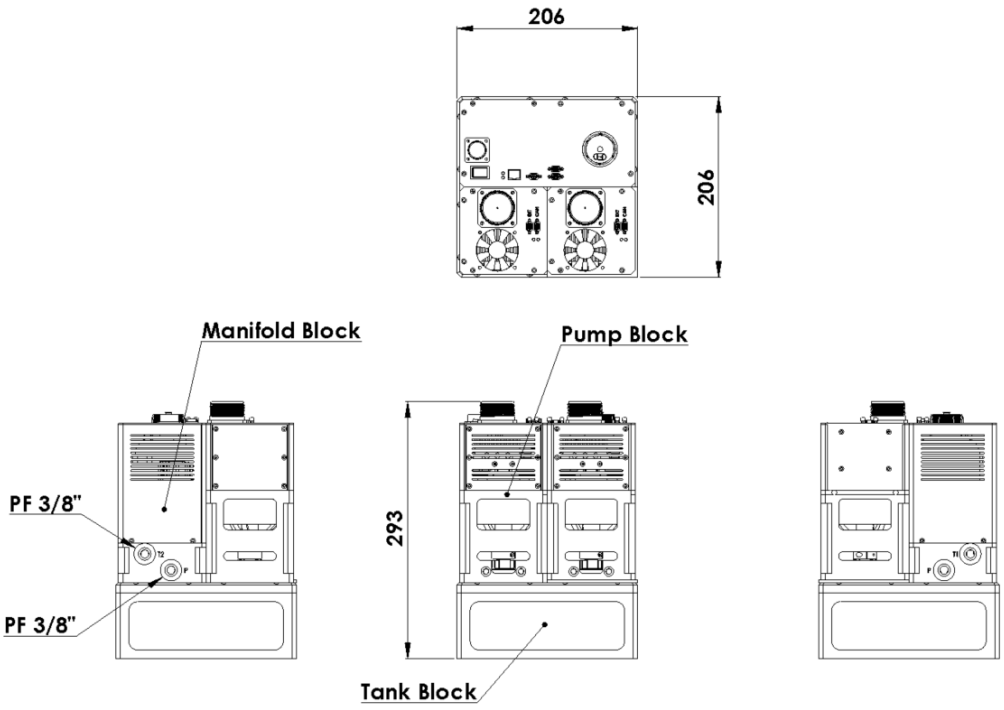
SPECIFICATION

(Hydraulic Circuit)



DIMENSION

2 Module



4 Module