MyDro Expansion Modules

Increase the monitoring possibilities
of the MyDro remote terminal unit

Expand MyDro 850 remote terminal unit (RTU) monitoring possibilities with MyDro Expansion Modules. Add one individually or one of each type. The MyDro RTU automatically recognizes the module when it is installed. The readings will be presented on the MyDro LCD screen and your web portal immediately.

Configurable options are presented on the LCD screen under the Config button. Your web portal is used to create alarm notification rules for the new I/O including alarm delays, analog thresholds, and flow (pulse) thresholds.

The expansion modules provide signal conditioning, isolation, ranging, analog–to–digital conversion, and digital–to–analog conversion. Digital communication to the MyDro is based on a unique device ID and communications cable (RS485 2–wire, plus power). The device ID has been set by Mission at the factory as indicated on the label. One of each expansion module can be included on a single MyDro, as described below. Modules are daisy–chained (wired in parallel) on the same data bus via the included communications cable.

Safe Module Plus (SMP)
The SMP is ideal for use with every sewer lift station application (MyDro 150 or 850) as well as applications involving pulse instruments like rain reporting or pulse base flow and some unique pump lock out functions. The SMP is explained in more detail in the MyDro Expansion Safe Module Plus section.

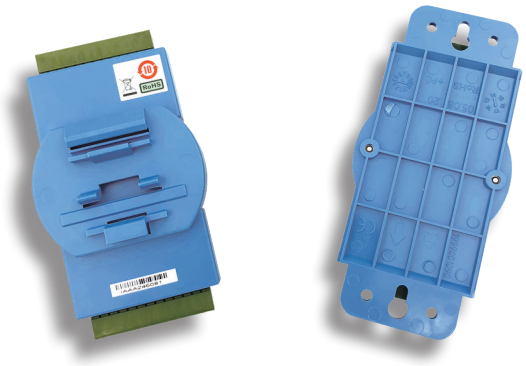
Analog Input Expansion Module (up to 9)
The MyDro's two on–board analog inputs can be expanded to nine with the analog input module. 4–20 mA or 0–5 VDC signals can be selected by an internal jumper and configuration at the MyDro touch screen.

Analog Output Expansion Module (up to 4)
The analog output can be used to remotely change chemical dosers, variable frequency drives, or variable position valves, either manually or automatically. Up to four output signal channels can be configured as 4–20 mA.

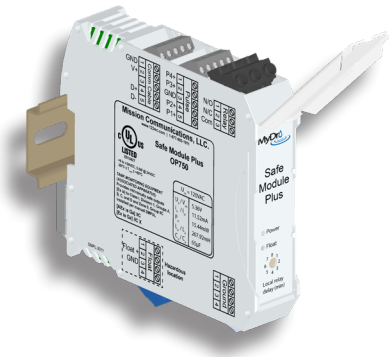
Digital Input Expansion Module (up to 16)
The MyDro's eight on–board digital inputs can be expanded to 16 with the digital input expansion module. The inputs can be connected to instruments that provide a dry–switch closure or a powered signal up to 50 VDC.

Digital Relay Output Expansion Module (up to 9)
The MyDro's three on–board digital outputs can be expanded to nine with the six digital outputs on the digital relay output expansion module. Each output can be connected to control a device such as a pump or blower.

- **Easy to install**
- **Expands RTU inputs and outputs**
- **MyDro supports one of each expansion module simultaneously**
- **Includes communication cable capable of long distances (RS485)**



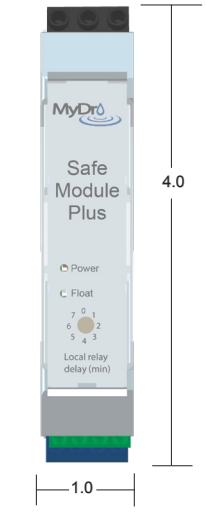
- **Mounts to DIN rail or as a flat back mount**



- **Mounts to a DIN rail**

Dimensions

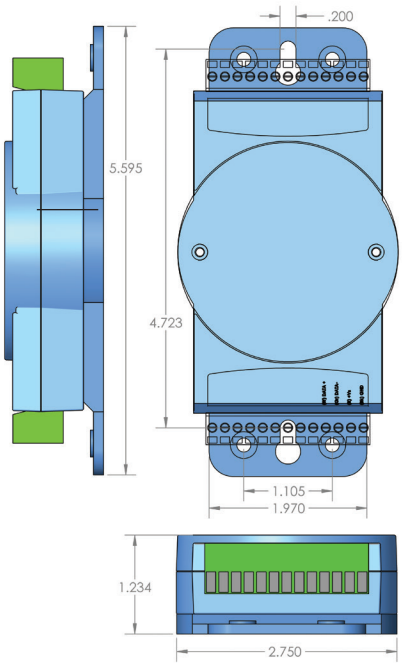
SMP DIN Rail Mount



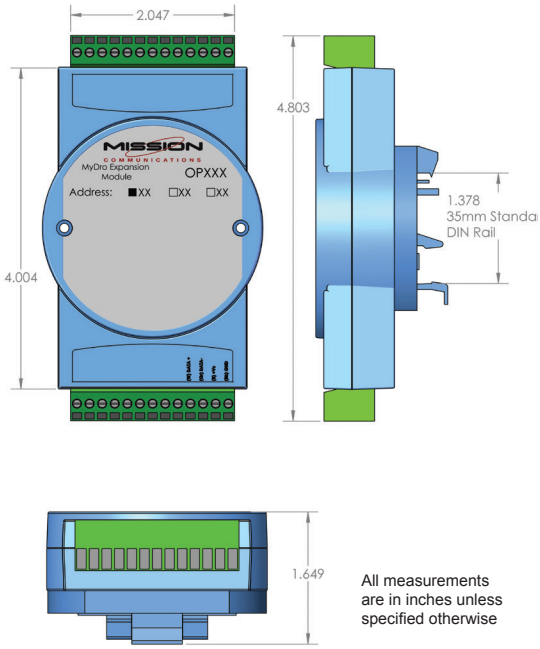
Depth (not pictured): 4.0

Interchangeable Mount Options

Direct Mount



DIN Rail Mount



All measurements are in inches unless specified otherwise

Specifications

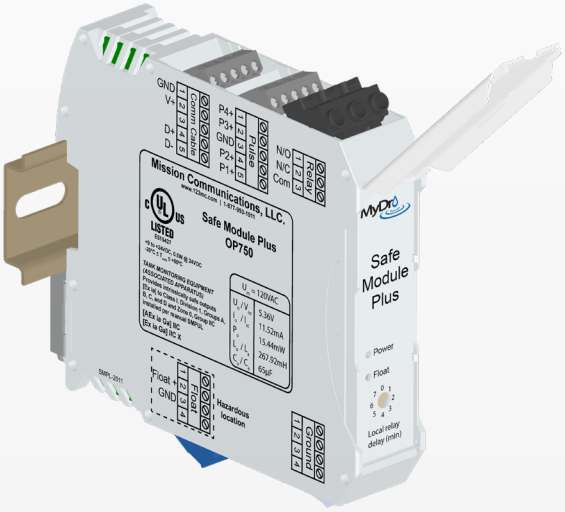
Data	Description	Safe Module Plus	Analog Input	Analog Output	Digital Input	Digital Relay Output
	Mission product number	OP750	OP465	OP461	OP653	OP654
	Device ID (decimal)	200	20	40	10	50
I\O	Additional Channels	4PI + 1 Float 1 Relay Output	7	4	8	6
	Voltage on terminals	Dry or wet: up to 24 VDC	In: 4–20 mA or 0–5 VDC	Out: 4–20 mA	Dry or isolated: 0–50 VDC	250VAC, 10A
	Input impedance	>1MΩ	Current: 120 Ω Voltage: 20M Ω	0.5 Ω out, max current load is 500 Ω	5.2K Ω	N/A
	Timing	N/A	N/A	N/A	N/A	N/A
Communications	Cable (PN CP500)	Jacketed with RJ45 terminal on MyDro end, tinned on other, 2 conductors for data, 2 for power				
	Protocol	RS485 (2–wire: Data+, Data -)				
	Maximum communication distance	4,000 feet, voltage drop must be considered				
	Indicators	Power, Communications			Power, Communications, DI	Power, Communications
	Asynchronous data format:	Handled by MyDro (no config required) 1 startbit, 8 databits, 1 stopbit, no–parity, with checksum				
	RS 485 transient suppression	Yes				
Power	Range		10–30 VDC, unregulated, protected against power reversal			
	Maximum power (including instruments)	0.5W	1.2 W	3 W	1 W	2.3 W
Mech	Case		Acrylonitrile butadiene styrene (ABS) and polycarbonate (PC) with captive mounting hardware			
	Included mounting plates		35 mm DIN rail or direct panel mount			
Terminals	Wire gauge		14–28 AWG			
	Mission PN	Included	CP501	CP502		CP502
Service	Service Package	Requires service package PN SPMB-12				
Environment	Certifications		FCC, LE, ROHS			
	Temperature		-10 – 70° C			
	Humidity		5–95%, non–condensing			

*The MyDro RTU can source up to 3W over the communications cable, and share the battery capacity with expansion modules and instruments when loss of AC power occurs. The ampacity of the standard 5Ahr yields 60Whr. Consider upgrading the backup battery (PW427) for longer use when no main power is available.

MyDro Expansion Safe Module Plus

Intrinsically safe float circuit, speeds installation, and supports pulse inputs

Automatically recognized by the MyDro 150 and 850, the MyDro Expansion Safe Module Plus is the most powerful expansion module for the remote terminal unit (RTU). Designed for water and wastewater environments, the MyDro Safe Module Plus mounts onto a DIN rail and connects directly to the RTU communications and power.



For Hazardous Environments

Most sewer lift stations are considered hazardous locations per the National Electric Code (NEC Rule 22–704). The MyDro Safe Module Plus allows the state of a high–level float (located in the hazardous location) to be shared with both the local control panel and the Mission RTU while complying with NEC requirements for hazardous environments. The float–sensing circuit is certified for Class I, Division I (methane) environments typical of sewer lift stations.

Speeds Installation

This optional module connects to the MyDro 150 or 850 RTU with a quick–connect communications cable. The cable powers the module and includes the RS485 communications link between the two components. The RS485 standard is capable of reliable communications up to 4,000 feet, allowing the module to be located closer to the sensed elements. The enclosure is compatible with standard DIN rail. Terminals are front–facing.

High Wet Well Alarms Even When AC Has Failed

High wet well events are reported even when there is no AC power to the station because of the backup battery associated with the MyDro unit.

Relay—Local Alarm

A built–in relay can drive a local alarm light and buzzer based on float.

Relay—Lock-Out Functions

The relay can be used with safety lock–out functions. A selectable debounce (time delay) can be set for the included relay to avoid short cycling because of a bouncing float. For example, in clean water applications the relay can be included in the control circuit of a service pump and used to lock out the pump before the supply runs dry, as indicated by a normally open (N/O) low–level float. The Mission notification system can be set to dispatch a notification, such as “service pump lock–out activated because low supply level.”

Four Pulse Channels

The four pulse channels are typically used with rain tipping buckets and pulse–based flow meters. The inputs support dry, open collector, and wetted circuits. Non–volatile memory maintains the pulse count during extended power outages or if the communication cable is disconnected. Pulse counts accumulate even if the MyDro RTU is offline as long as it has power.

Supervision

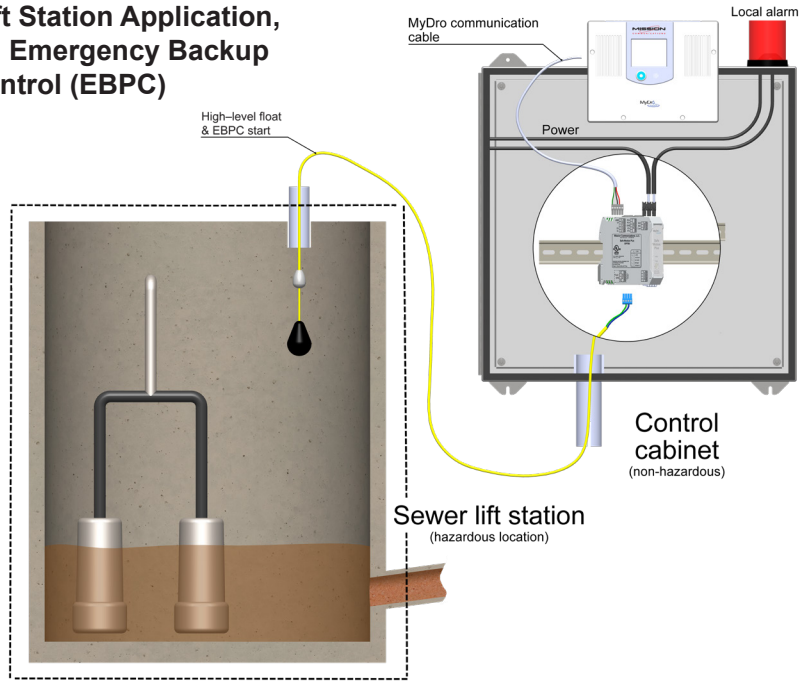
The MyDro reports RS485 communication failures and intrinsically safe circuit failures if they occur.

Preferred Input Devices for Emergency Backup Pump Control

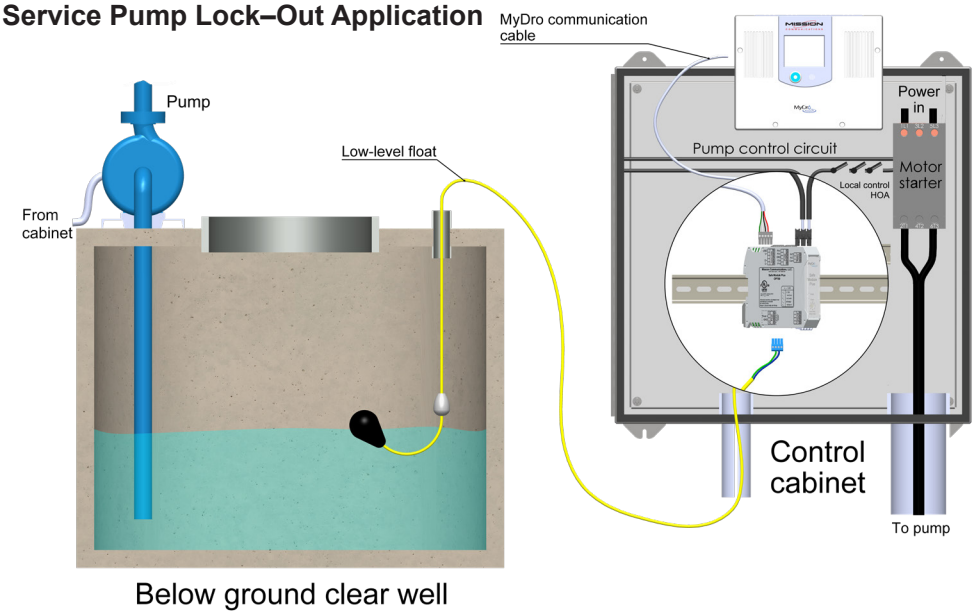
Two SMP expansion modules are perfect for connecting floats to operate the RTU’s optional Emergency Backup Pump Control feature.

- **Reduces installation time and complexity**
- **Includes a float circuit designed for hazardous locations typical of a sewer lift station**
- **Dispatches high wet well alarms even if AC power fails**
- **Allows multiple purposes for duplicate float signals**
- **Supports four pulse channels**

Sewer Lift Station Application, Including Emergency Backup Pump Control (EBPC)

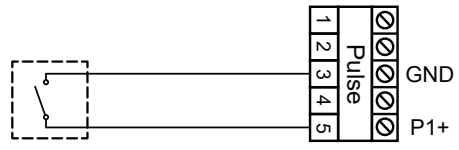


Service Pump Lock–Out Application

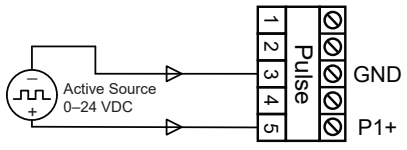


Below ground clear well

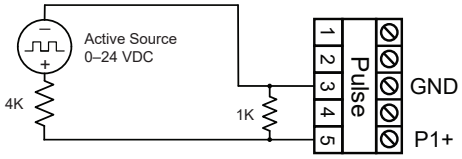
Pulse Applications



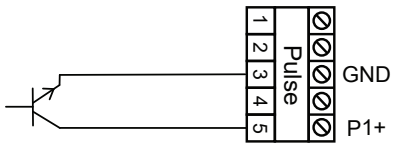
Dry contact pulse input



Active pulse input



24V DC example - Active pulse input with optional voltage divider



Open collector with NPN transistor

Specifications

Float–Sensing Circuit (PN OP750)**:**
- Current and voltage limited
- Certified Class I, II, III, Division I, Groups D–G T1

Power:
- 10 to 30 VDC
- Supplied by MyDro (backed up by battery) when included communications cable is used
- 0.5 W max (when relay is energized), 0.5 W quiescent

Communications Cable (PN CP500)**:**
- 2 conductors for power
- 2 conductors for communications
- Shielded cable, grounded at MyDro via RJ45
- RS485 differential pair (D+, D-)
- Modbus RTU (slave address=200)
- Additional I/O expansion available; see MyDro Expansion Modules specification sheet

Interposing Relay:
- Maximum 10 A at 120 VAC
- Maximum 14 gauge wire

Relay Lock–Out Mode:
- Relay state change coincident with float change or with configurable time delay for debounce purposes
- Time delay configurable with rotary switches (0, 1, 2, 3, 4, 5, 6, 7, etc. minutes)

Pulse Channels:
- 4 channels, common ground
- Minimum pulse width 8 msec high, 8 msec low
- Dry input (polarity insensitive)
- Open collector (polarity sensitive)
- Wetted up to 24 VDC

Onboard LEDs:
- Power
- Float

Physical/Environmental:
- 30 mm DIN rail mount
- 100 mm H x 100 mm D x 25 mm W (4 in x 4 in x 1 in)
- 0.5 lb
- -20° C to 60° C, non-condensing
- Enclosure is flame resistant polyamide
- ROHS certified (lead-free)

Includes:
- Safe Module Plus
- 3–in DIN rail with screws
- 4 x 4 removable terminals
- Communications cable
- Installation instructions

Service:
- Expansion service fee—12 months (PN SPOP–12)

Certification:
- (c) UL, UL (US), E515427

Warranty:
- Two year manufacturing and material warranty

MISSION COMMUNICATIONS

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