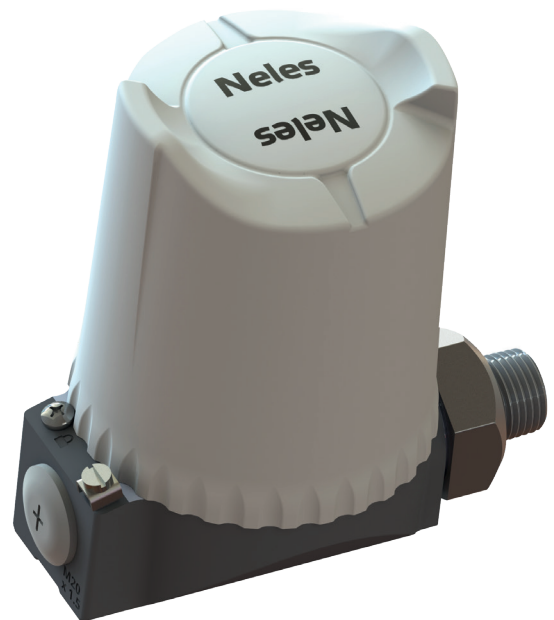


Neles™ LoRa Communication Module for Neles™ ND6000™, ND7000™, ND9000™ and NDX™ HART variants

Neles™ LoRa Communication Module (LCM) is a retrofittable wireless add-on device for Neles™ valve controllers ND9000™, ND7000™, ND6000™ and NDX™. LoRa communication module is intended especially for control systems lacking HART communication capability. It enables communication by sending diagnostic data to Valmet cloud for centralized valve fleet monitoring. The analysis results of monitoring are shared with end users via dashboard within the Valmet Customer Portal.

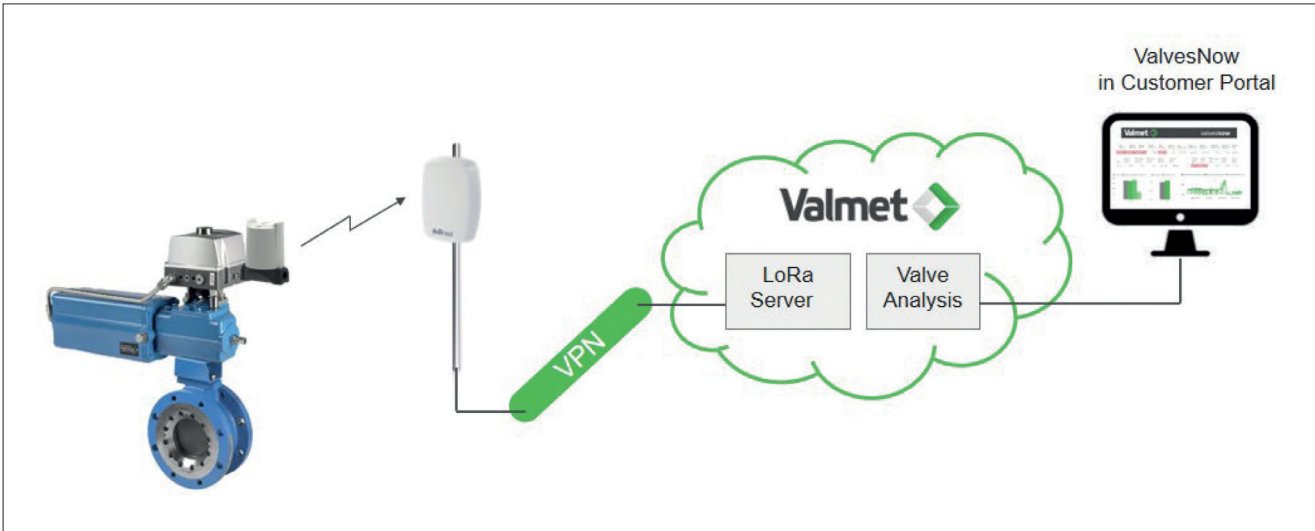
LoRa communication means a long-range, low-power telecommunication protocol. The modem features a LoRa radio with an integrated antenna. The LoRa radio operates on international, license-free bands 863-870 MHz (EU) and 915-928 MHz (Brazil).

Communication between Neles valve controller and LoRa module is according to HART standards where LoRa module is acting as a secondary HART master. The actual LoRa communication between LoRa module and Valmet cloud is according to LoRa protocol utilizing a private LoRa network established by Valmet at the production site.



Communication

Communication is only one way from LoRa module via LoRa gateway to LoRa server. There is only cyclic data reading from valve controllers, no writing / configuration access. Cyclic data reading is typically 9-12 data messages per module per day including about hundred diagnostic values. The rather small amount of data can provide a sufficient picture of the valve performance since edge computing is utilized in valve controllers and only precalculated summary values and alarm messages are sent over LoRa.



LoRa Communication Module is the easiest way for giant leap to valve digitalization offered as part of ValvesNow valve fleet monitoring agreement. The monitoring analysis pinpoints devices needing attention, optimizing maintenance by prioritizing valve issues. And the actions on right devices ensure entire plant performance.

Key features:

- Enables device communication for plants with automation systems lacking it
- Easiest and most cost-efficient communication for valves
- Retrofittable, by nature, to existing installations
- Plug and play mounting into valve controller's cable entry
- No battery, energized by 4-20 mA control loop
- Supports Industry standard HART protocol
- Reliable, long-range wireless LoRa technology
- Typically, 3-4 gateways able to cover production areas (several hundreds of meters)

Technical description

Neles™ LoRa Communication Module contains a microcontroller, HART modem, LoRa radio and antenna. The LoRa antenna is integrated on the printed circuit board under the cover and features a nearly omni-directional radiation pattern. The module supports European and Brazilian LoRa frequencies.

The LoRa module itself is fitted into the cable entry of the positioner. Electrical wise the module is connected to the 4-20 mA control loop in series with the positioner allowing the original mA control signal path to the positioner. The control loop powers both the positioner and the LoRa module.

For commissioning and maintaining purposes the module has a USB-C interface under its cover (USB 2.0 Full-Speed).

LoRa Communication Module communicates with the positioner using HART protocol. Outward communication is according to LoRaWAN protocol. The module is preconfigured to communicate with Valmet LoRa server.

Technical specifications

System port

Connector type	Screw terminal
Cable cross section	2.5 mm ² max.
Connector pinout	IN+(250 R) (Optional 250R resistor to increase impedance on HART frequencies for legacy systems without HART support)
	IN+ (4-20 mA loop positive)
	IN- (4-20 mA loop return)

Current loop characteristics

Supply power	Loop powered, 4–20 mA
Minimum loop current	3.6 mA
Maximum loop current	120 mA
Maximum DC voltage	+28 VDC
Maximum negative polarity	-28 VDC
Maximum voltage drop	1.5 VDC @ 20 mA (corresponding 75 ohm)
HART input DC leakage	<10 uA

Positioner port

Connector type	Screw terminal
Cable cross section	2.5 mm ² max.
Connector pinout	OUT- (4-20 mA loop return from positioner)
	OUT+ (4-20 mA loop positive to positioner)
	CHGND (optional connection to chassis ground, not connected)

LoRa radio

Frequency range (EU868)	863-870 MHz
Frequency range (AU915)	915-928 MHz
Antenna gain	0 dBi
Maximum transmit power	EU868 +16 dBm AU915 +22 dBm

USB port

USB-C 2.0 Full-Speed

PT loop input from positioner

Connector type	Screw terminal
Cable cross section	2.5 mm ² max.
Connector pinout	PT+ (PT loop positive from positioner)
	PT- (PT loop return to positioner)

Mechanical

Size:	140 mm x 125 mm x 87 mm
Material:	Aluminium housing with polycarbonate cover
Protection class:	IP66
Thread: attachment to positioner	M20 x 1.5
	ND6000, ND7000, ND9000

PT loop output to system

Connector type	Screw terminal
Cable cross section	2.5 mm ² max.
Connector pinout	PT- (PT loop return to system)
	PT+ (PT loop positive to system)

	1/2 NPT	(NDX)
Field cable gland thread	M20 x 1.5	
Weight:	0.65 kg / 1.4 lbs	

Environmental specifications

Operating temperature	-40 °C ... +75 °C
Vibration	Tested according to ANSI / ISA-75.13.01-2013: 2g 5-150 Hz, 1g 150-300 Hz, 0.5g 300-2000 Hz

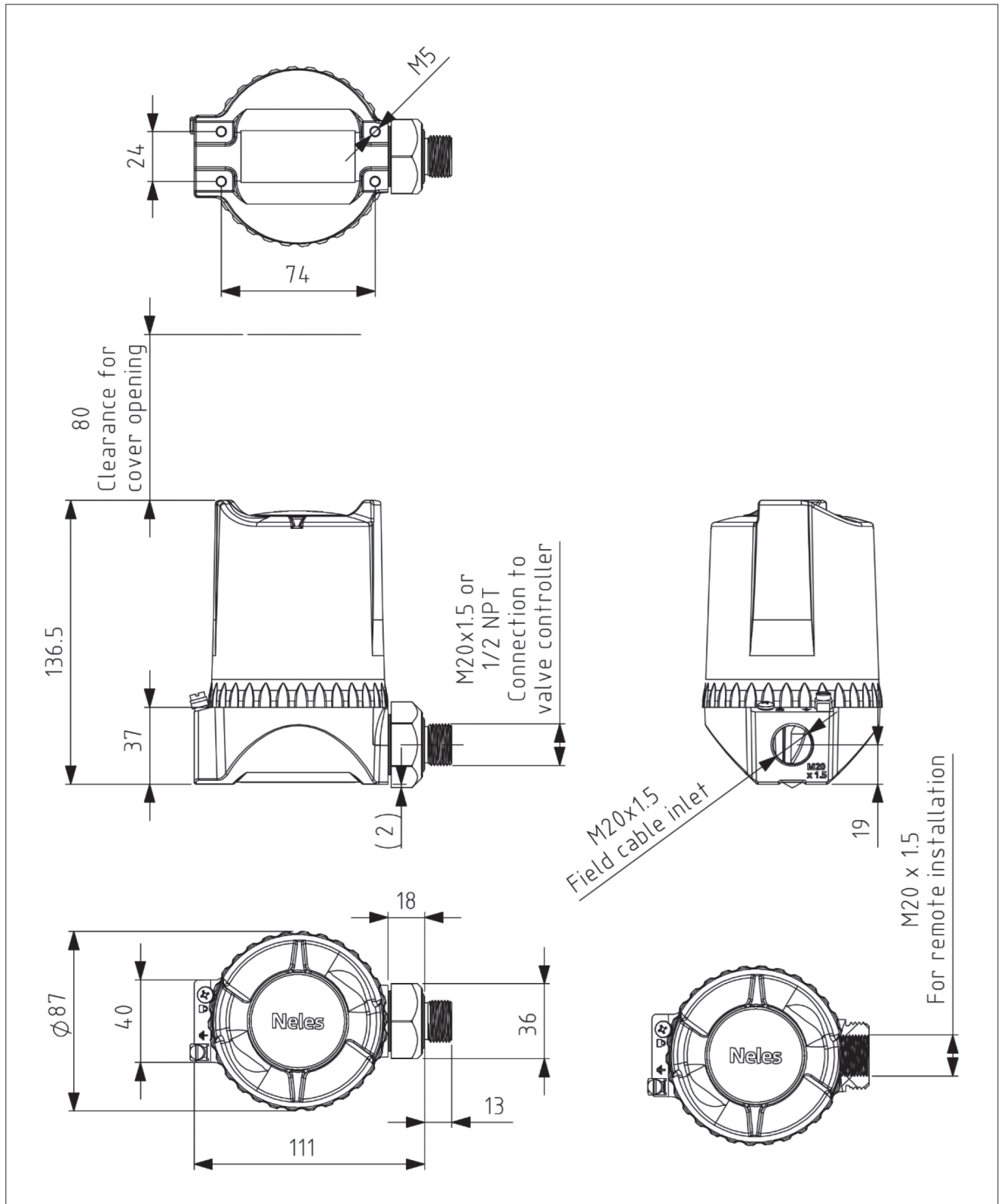
Energy storage, charging

Charging time from loop without pre-charging	2:30 hours (4 mA loop current, at minimum 3.6 mA) 15 min (20 mA loop current)
Charging time from USB-C	3 min (standard charging) 1 min (fast charging)
Commissioning time	1 hour (time for which the supercapacitor can hold its charge during field installation)

Standards compliance

Health and safety	EN 62368-1:2014 and EN IEC 62368-1:2020 / 2024
EMC	EN 61326-1:2021 EN 61000-6-4:2019 EN 61000-6-2:2019 CISPR 11 / EN 55011 11:2019 EN 61000-4-2:2025 EN 61000-4-3:2020 EN 61000-4-4:2012 EN 61000-4-5:2017 EN 61000-4-6:2023 EN 61000-4-8:2010
Radio	ETSI EN 300 220-2 V3.3.1 (2025-03)
Cyber security	EN 18031-1:2024

Dimensions



Type code

LoRa Communication Module variants are available for EU and Brazil region.

The difference is the used frequency band, which is not user configurable.

Europe 863-870 MHz EU868 frequency plan

Brazil 915-928 MHz AU915 frequency plan

Neles™ LoRa Communication Module is offered only as part of ValvesNow valve fleet monitoring agreement.

1.	2.	3.	4.	5.	6.	7.
LCM	01	A	1	N	01	N

LCM01A1N01N

1.	Product group
LCM	LoRa Communication Module

2.	Region
01	Europe EU868 (863-870 MHz)
02	Brazil AU915 (915-928 MHz)

3.	Frequency
A	Frequency area 863 - 928 MHz

4.	Enclosure
1	Aluminium housing with polycarbonate cover

5.	Approvals for hazardous areas
N	No approvals
X	ATEX & IECEx (pending)
Z	Inmetro (pending)

6.	Wire assembly
01	Four-wire with grommet

7.	Brand
N	Neles

Accessories	
-	Fastening thread
L01	M20 (Suitable for ND9000, ND7000, ND6000)
L02	NPT (Suitable for NDX)

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