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# COMPACT MULTIPOINT ALL BUS POWERED NEMA 4X Smart HiQ(DT) Sensor Bridge Box to interface Windows Configuration, Calibration & Datalogging Software

This compact NEMA 4X bridge box assembly has NEMA 6P rated snap connectors for an easy plug & play hot-swappable interface for up to 3 each smart digital HiQ(DT) sensors. The industrial grade RS-485 to USB converter is powered from USB port as are the connected sensors via the combination of an integral current regulator on the RS485 to USB converter and the 5 to 12 VDC converter and isolator board.

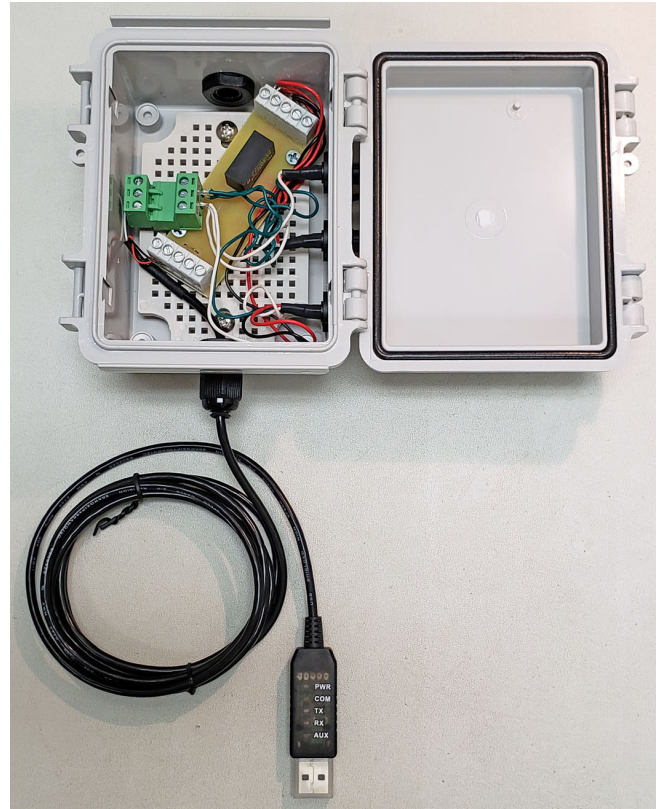
## HiQ(DT) SENSORS TO WINDOWS BRIDGE BOX ALL BUS POWERED SPECS:

Base Enclosure:	1MF NEMA 4X ENCLOSURE ASSEMBLY
Dimensions:	150mm Width X 70mm Height X 120mm Depth (5.9" X 2.8" X 4.7" Inches) <i>Approximate dimensions include panel mounted HiQ(DT) snap connector protrusions</i>
Sensor Inputs:	Up to 3 each smart digital HiQ(DT) sensors (hot-swappable with snap connector)
Components:	1) Industrial grade bus powered RS-485 to USB converter with integral current regulator for auxiliary bus powered serial smart digital sensor devices 2) Isolated & Regulated 5 to 12 VDC converter to energize smart sensors 3) Three HiQ4FP female panel mount connectors for male HiQ4M snap from sensors
USB Current Draw:	Minimum 110mA @ 5VDC, Maximum 243mA @ 5VDC
Sensor Capacity:	Min 1 each pH, ORP, Dissolved Oxygen (D.O.), Ion Selective (ISE), Conductivity Sensor Up to 3 each pH, ORP, Ion Selective (ISE) Sensors Up to 2 each Dissolved Oxygen (D.O.) Sensors
Sensor Connections:	Up to 3 each HiQ4F female panel connector for HiQ(DT) sensors with HiQ4M male snap
Cable for PC:	1 each USB male "A" cable, 1.5 meters (5 feet), plug & play to any Windows PC or tablet
Weight:	0.4 kgs (0.9 lbs) not including any connected sensor(s)
Temperature Rating:	From -25°C to +70°C both for Continuous Field Usage as well as Storage
Access Control:	Security via user-supplied padlock installed onto integral latch hook on enclosure
Assy Approvals:	NEMA 4X assembly when snap cable connectors are installed and/or covers are secured Suitable for use in safe areas; not recommended for use in hazardous rated areas
Connector Rating:	Fully waterproof NEMA 6P when interfaced; Use protective cap when not in use
Special Version:	Available in configuration WITHOUT RS485 to USB converter; ONLY to be used when a <u>regulated</u> 5VDC (USB) power supply is used to energize sensors wired directly to PLC

## Selected Pictures of COMPACT MULTIPOINT ALL BUS POWERED NEMA 4X Smart HiQ(DT) Sensor Bridge Box for Windows Software



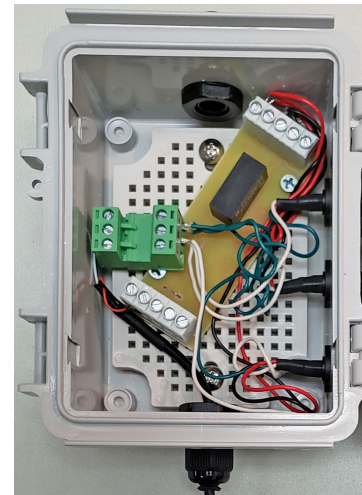
*Integral 1.5 meter (5 foot) USB cable provides power to energize sensors as well as all communications between Windows Software acting as RS485 MODBUS RTU master and Smart Sensors acting as slaves*



*Inside view of assembly with top lid opened. In order to maintain NEMA 4X rating of assembly the top lid must be closed at all times. Red & Black are Power & Ground and White & Green at D+ & D-*



*Up to 3 each smart sensors can be interfaced using HiQ4FP female panel mount connectors with male HiQ4M sensor cable end termination. The sensor connections are NEMA 6P rated when interfaced. The cap should be affixed when not in use to maintain the waterproof rating. The 1/4" MNPT cable gland on right can be used to an additional cable to send communications or power from or two an external device.*



*The 5VDC power from the USB port is stepped up to 12VDC using a custom made isolated DC/DC converter board. This allows for USB power to effectively energize up to 3 each connected smart sensors. The current regulator in the RS-485 to USB converter ensures that the max load capacity is not exceeded so as not to harm any of the electronics inside the sensor nor inside the bridge box assembly.*



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## NEMA 4X Bridge Box for Smart Digital HiQ(DT) Sensors to Windows Configuration & Calibration Software

This NEMA 4X bridge box assembly has NEMA 6P snap connectors for an easy plug & play hot-swappable interface for both the smart digital HiQ(DT) sensor input & USB cable for interfacing the Windows software for calibration, setup and configuration. The industrial grade RS-485 to USB converter is powered from USB port while the smart digital HiQ(DT) sensor is powered from a removable 9V battery. The configuration where the HiQ(DT) sensor is energized from a single 9V battery enables normal measure and calibrate modes whereas wiring two each 9V batteries in series invokes the bootloader mode to flash update sensor software.

### HiQ(DT) SENSORS TO WINDOWS BRIDGE BOX PRODUCT SPECIFICATIONS:

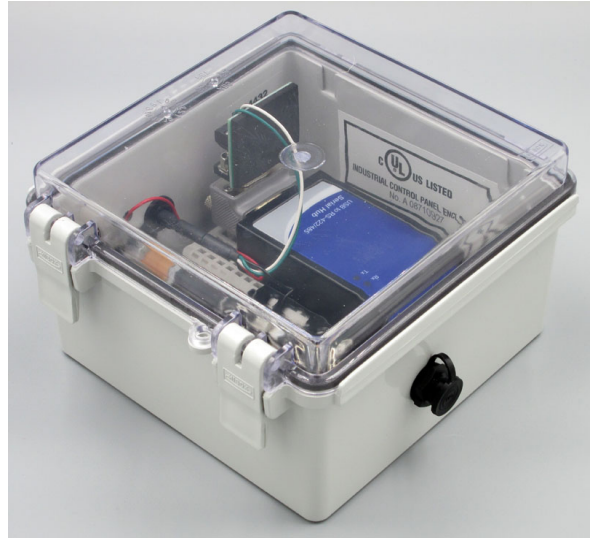
Base Enclosure:	3MF NEMA 4X ENCLOSURE ASSEMBLY (see drawing for details)
Dimensions:	170mm Width X 170mm Height X 100mm Depth (6.7" X 6.7" X 3.9" Inches) <i>Approximate dimensions include panel mount HiQ(DT) &amp; USB snap connector protrusions</i>
Sensor Input:	<b>1 each smart digital HiQ(DT) sensor</b> (hot-swappable with snap connector)
Contents:	Industrial grade RS-485 to USB converter module suitable for use in field, lab or shop 2 each 9V batteries ( <i>Not supplied by ASTI, Must be Purchased Separately</i> ) 2 each 9V battery clips; Setup for standard mode or wired in series to invoke bootloader
Capacity:	~375mAH to 7VDC for typical alkaline 9V or ~750mAH to 7VDC for typical lithium 9V
Usage Time:	<b>~25 hours per 9V alkaline battery, ~50 hours total when both batteries are discharged</b> <b>~50 hours per 9V lithium battery, ~100 hours total when both batteries are discharged</b>
Standby Time:	Only limited by battery leakage limits; 9V battery does not discharge unless HiQ(DT) sensor is connected; Only 1 each 9V battery used in normal calibrate or measure mode
Sensor Connection:	1 each HiQ4F female panel connector for digital HiQ sensors with HiQ4M termination
USB Connection:	1 each Q6F female panel connector for USB Male "A" cable with Q6M snap connector
Cable for PC:	1 each USB male "A" cable, 2 meters, plug & play to Windows with Q6M snap connector
Weight:	0.8 kgs (1.7 lbs) with 2 each 9V batteries installed (not including portability package)
Temperature Rating:	Usage and storage temperatures from -15°C to +50°C
Access Control:	Security via user-supplied padlock installed onto integral latch hook on enclosure
Assy Approvals:	NEMA 4X assembly when snap cable connectors are installed and/or covers are secured Suitable for use in safe areas; not recommended for use in hazardous rated areas
Connector Rating:	Fully waterproof NEMA 6P when interfaced; Use protective cap when not in use
Portability Package:	Adds optional rugged rubber feet & carrying handle (inquire for dimensions & weight)



## Selected Pictures of NEMA 4X Windows Bridge Box Assembly



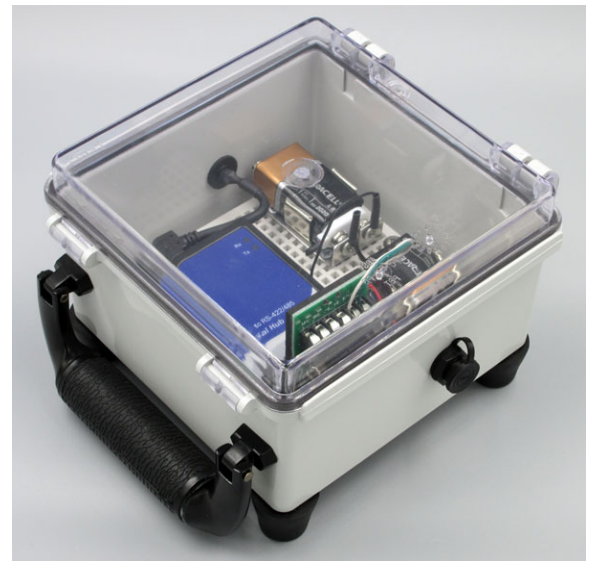
*With Smart Digital Sensor & USB Cable Connected*



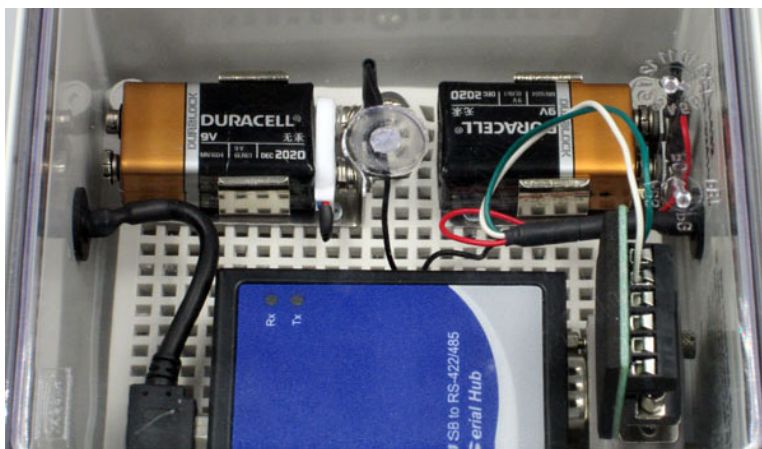
*Isometric View with sealing cover installed for connector*



*Digital Sensor & USB Cable Connected with Portability Package Option*



*Isometric View with Portability Package Option Style*



*Inside View showing Industrial RS-485 to USB Converter & Wiring Detail*



*USB Male "A" to Q6M Male Snap Connector (7 feet)*



## HiQ4F-Xm-TL-9VBat-XS885 Bridging Cable Assembly for Smart Digital HiQ(DT) Sensors to Windows Software

This HiQ4F-Xm-TL-9VBat-XS885 bridging assembly offers the same core functionality of the NEMA 4X bridge box assembly detailed on previous pages including an easy plug & play hot-swappable interface for the smart digital HiQ(DT) sensor input & RS485 to USB converter to interface the Windows software for calibration, setup and configuration. The compact RS-485 to USB converter in this assembly is USB port powered while smart digital HiQ(DT) sensor is powered from a removable 9V battery. If the HiQ(DT) needs the onboard software to be flash updated then NEMA 4X Windows Bridge box assembly must be used. All other functionality is possible using the bridging assembly for the HiQ(DT) smart digital sensors detailed here. Since the HiQ4F-Xm-TL-9VBat-XS885 bridging assembly is not waterproof it is recommended to use it in a suitable indoor location that is free from moisture and/or potential exposure to water to the bridging assy. If a fully waterproof field solution is required please use the NEMA 4X assembly that is previously detailed.

### HiQ(DT) SENSORS TO WINDOWS BRIDGING CABLE ASSEMBLY SPECS:

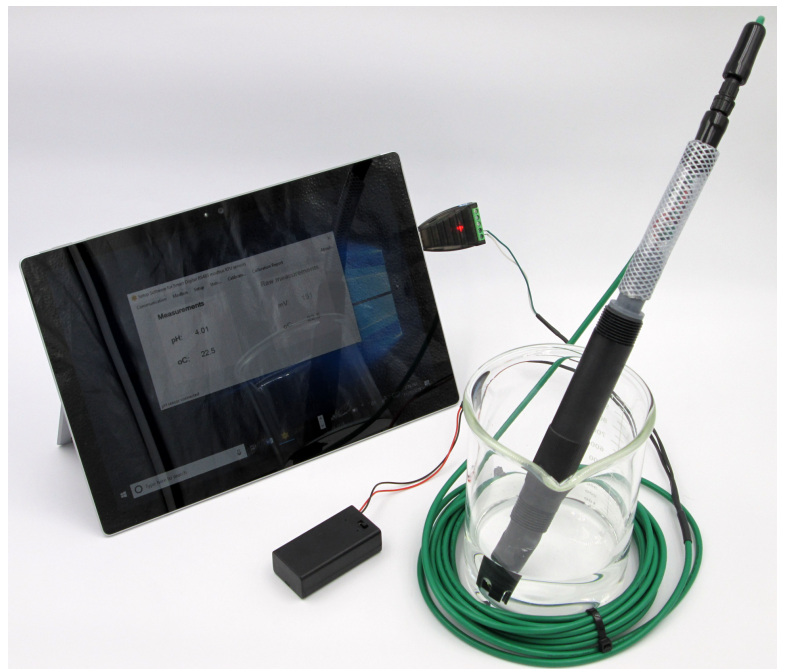
Overall Description:	Bridging assembly for HiQ(DT) sensors terminated with HiQ4M male snap connectors
Input Connection:	HiQ4F-Xm-TL female snap to tinned lead cable receives HiQ4M male snap connector from HiQ(DT) sensor to form NEMA 6P rated waterproof connection where "X" designates length of cable in meters (1.5, 3.0, 6.0 or 12.0 meters are standard options)
Power Connection:	Removable 9V battery in plastic holder with On/Off toggle serves as power switch and is hardwired to the HiQ4F-Xm-TL female snap to tinned lead cable
PC Connection:	Compact RS485 to USB converter to send and receive D+ & D- signals to Windows PC
Sensor Input:	<b>1 each smart digital HiQ(DT) sensor</b> (hot-swappable with snap connector)
Contents:	Compact RS-485 to USB converter module to interface USB port on Windows PC HiQ4F-Xm-TL female snap to tinned lead cable ("X" is cable length in meters) 9V battery with plastic holder and On/Off toggle switch
Capacity:	~375mAH to 7VDC for typical alkaline 9V or ~750mAH to 7VDC for typical lithium 9V
Usage Time:	<b>~25 hours per 9V alkaline battery or ~50 hours per 9V lithium battery</b>
Standby Time:	Only limited by battery leakage since there is no discharge unless sensor is connected
Temperature Rating:	Usage temperatures of -13°C to +70°C and storage temperatures from -40°C to +85°C
Connector Rating:	Fully waterproof NEMA 6P when interfaced; Use protective cap(s) when not in use

## Selected Pictures of HiQ4F-Xm-TL-9VBat-XS885 Bridging Cable Assembly Connected to Microsoft Surface Tablet and Short “STUBBY” Smart Digital HiQ(DT) Sensor



The HiQ4F-6m-TL-9VBat-XS885 bridging cable assembly for HiQ & HiQDT smart digital sensors is shown interfaced to a Microsoft Surface Table device with the necessary port selected ready to receive the mating sensor. Only the HiQ4FP femal snap connector (shown without protective cap) need to have the HiQ4M male snap connector from the sensor interfaced and the toggle switch turned to “On” to energize the sensor. The toggle switch can be left in the “On” position if desired since the battery will not discharge unless there is a mating HiQ(DT) smart digital sensor connected.

PN 6353-HiQDT-STUB Immersion Slurry Resistan STUBBY Style RS-485 MODBUS RTU Smart Digital pH Sensor is shown connected to the bridging cable assembly which is in turn shown interfaced to a Microsoft Surface Table device with the necessary port selected ready to receive the mating sensor. The bridging cable assembly shown here offers a lower cost solution to interface the HiQ(DT) sensors to the free of charge Windows software than the NEMA 4X bridge box assembly. The bridging cable assembly is particularly useful for the “STUBBY” sensors with short cable assembly.



*Last Revised October 9, 2020*